

**PIONEER**

# Service Manual



The photo shows the model EQ-E303 (BK) / US

**ORDER NO.  
CRT 1016**

COMPONENT CAR STEREO GRAPHIC EQUALIZER

**EQ-E303(BK)**

US

**EQ-E303**

EW, ES

## SPECIFICATIONS

Power source ..... 14.4V DC (10.8—15.6V allowable)  
Grounding system ..... Negative type  
Dimensions ..... 150(W)×25(H)×148(D)mm  
Weight ..... 0.7kg  
Equalization frequency ..... 60Hz, 125Hz, 250Hz, 500Hz,  
1kHz, 3.5kHz, 10kHz  
Gain ..... -2 dB  
Equalization range ..... ±12 dB  
Frequency response ..... 20—30,000Hz (±3 dB)

Distortion ..... 0.06% (1kHz, 70mV)  
Signal-to-noise ratio ..... 85 dB (IHF-A network)  
Input impedance ..... 22kΩ  
Output impedance ..... Less than 1kΩ  
Max. output level ..... 200mV/1kHz, 1% THD

**Note:**

Specifications and the design are subject to possible modification without notice due to improvements.

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## 1. NAME OF PARTS AND USE

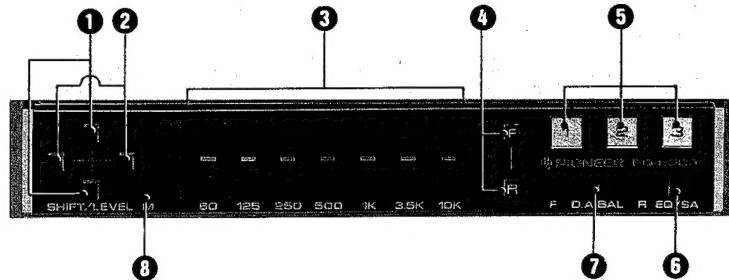


Fig. 1

### ① Level UP/DOWN Buttons

Adjust the level of the graphic equalizer to the desired setting. While the graphic equalizer indicator is flashing, press the UP button to raise the level and the DOWN button to lower the level.

### ② Frequency Shift Buttons

Switches the frequency of the graphic equalizer. While the graphic equalizer display is flashing, press the right button to raise the frequency and the left button to lower the frequency.

### ③ Level Indicator

A 7-step indicator that lights when the level UP/DOWN buttons are operated. The status of each frequency level can thus be determined at a glance. A strong level is shown in red while a weak level is indicated by green. The volume at each frequency is shown on the analyzer display.

### ④ Equalizer Front/Rear Buttons

Press one button to apply the equalizer function to either the front or rear speaker. Press both buttons to apply the equalizer function to both front and rear speakers.

### ⑤ Equalizer Preset Button

Equalizer settings can be assigned to preset memories 1 through 3 for later retrieval when required. (The number shown on the button will light when the button is pressed.)

### ⑥ Equalizer/Spectrum Analyzer Control

Switches between equalizer and spectrum displays.

### ⑦ Dual Amp Balance Control

Selects either front or rear speakers for a 2-amp 4-speaker system. Set to F for the front speaker and R for the rear speaker.

### ⑧ Mode/Memory Button

Press to cause the level indicator to blink for approximately 20 seconds. During this time the frequency can be switched and the level adjusted. Press again to cause all of the level indicators to blink for approximately 5 seconds. During this time the equalizer curve can be preset to a memory button.

## Creating an Equalizer Curve

### Before attempting operation

- Press the equalizer front/rear button ① and ensure that F or R is lit. (Press the equalizer rear button for 2-speaker systems.)
- 1. Press the mode/memory button ②. (A frequency level indicator will blink for approximately 20 seconds.) Perform the following procedures while the level indicator is blinking to adjust the equalizer level.
- 2. Press either the right or left frequency shift button ③ to select the desired frequency.
- 3. Press either the UP or DOWN level UP/DOWN button ④ to adjust to the desired level.
- Repeat steps 2 and 3 to adjust the other frequencies.
- Approximately 20 seconds after level adjustment the indicator will stop flashing. Press the mode/memory button ② again to change the adjusted level.

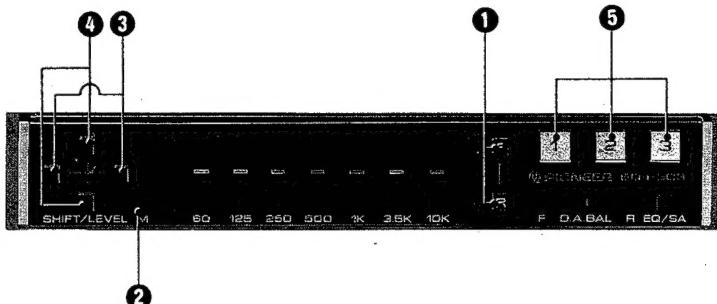


Fig. 2

## 2. PARTS LOCATION

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★: GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

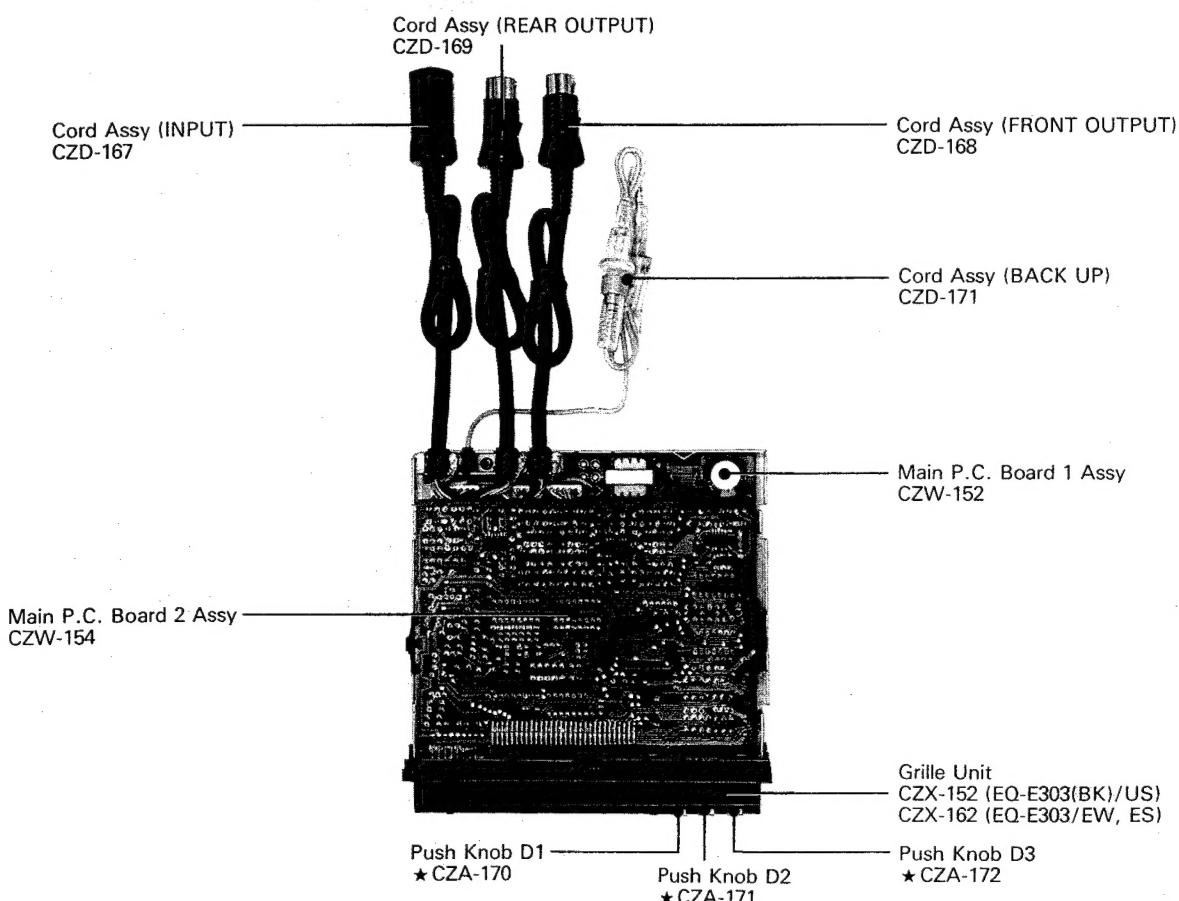


Fig. 3

### 3. CONNECTION

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the main amp instruction manual for details on correct connection of speakers and power supply.
- Don't run the leads for the input cord of this unit and the main amp speaker leads close together. If you do, the deck or tuner will generate unwanted noise.
- If distance between the graphic equalizer and main amp is too far to make proper connections, please buy the optional exclusive extension cord for the Component Car Stereo.
- When using two main amps, use the accessory power supply connector and connect the cord to the over 10A accessory connector. (Be sure that both amps are connected respectively to the ground.)

#### 2-speaker system

- Don't use the front speaker's cord for a 2-speaker system.

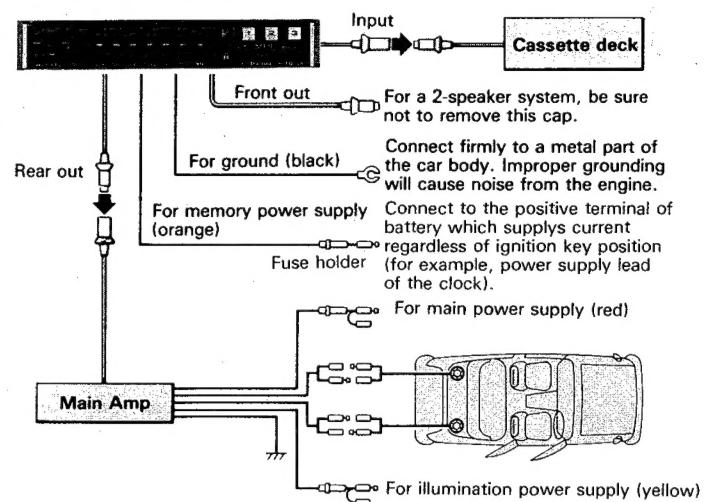


Fig. 4

#### 4-speaker system

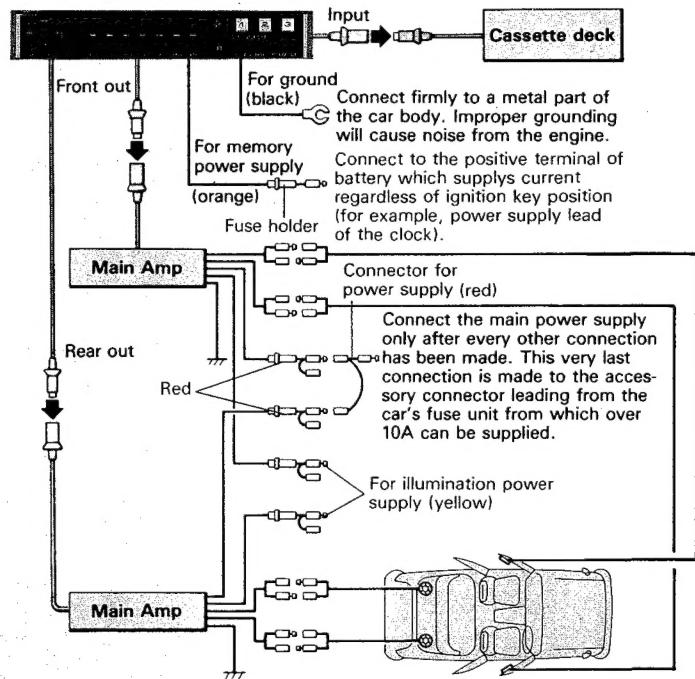


Fig. 5

## 4. DISASSEMBLY

### • Removal of Upper Case

1. Remove the four screws labeled (A), then remove the upper case.

### • Removal of Main P.C. Board 2 Assembly and Front Cabinet Assembly

1. Press the P.C. Board holder claws in the direction indicated by the arrow and lift the P.C. Board up from the main unit.
2. Remove the two screws labeled (B), then remove the front cabinet assembly.

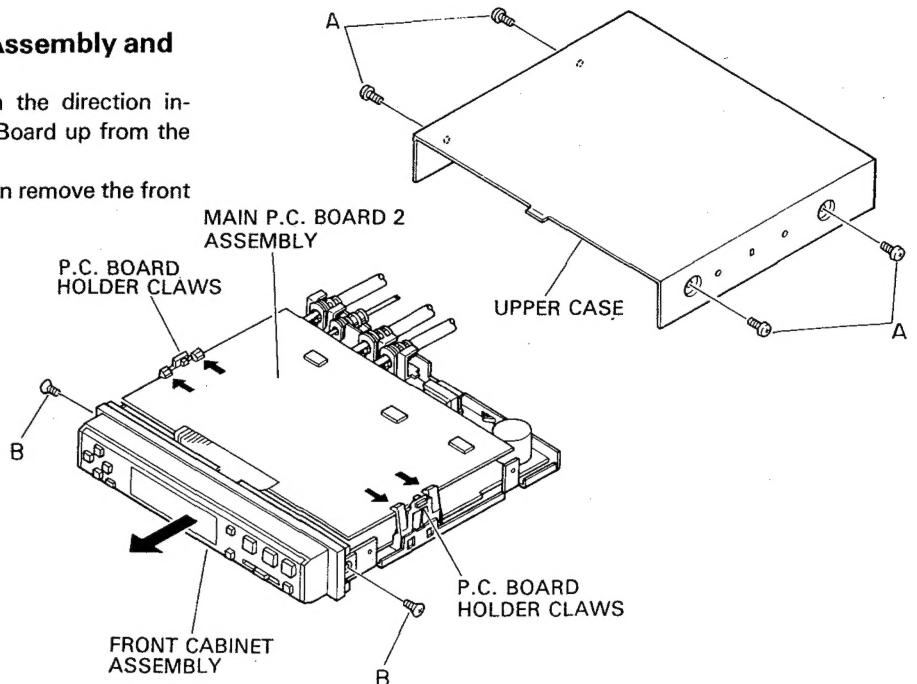


Fig. 6

### • Removal of LED P.C. Board Assembly

1. Remove the three screws labeled (E) and (F), then pull out the P.C. Board. Make sure to unclip the four claws holding the P.C. Board in position.
2. When reinstalling the P.C. Board, care must be given to the position of the collar notch.

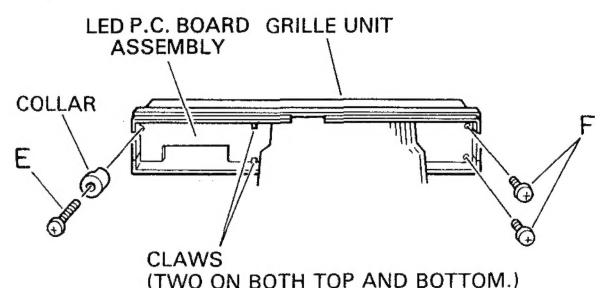


Fig. 7

- Removal of Volume P.C. Board and Main P.C. Board 1 Assembly

1. Remove the two screws labeled (C), then remove the volume P.C. Board.
2. Remove the screw labeled (D), press the P.C. Board holder claws in the direction indicated by the arrows, lift up the front part of the main P.C. Board 1 assembly and pull the P.C. Board 1 assembly toward you.

**\*Note:**

When reinstalling the main P.C. Board 1 assembly, make sure that you insert it beneath the boss of the lower case, as shown in the illustration.

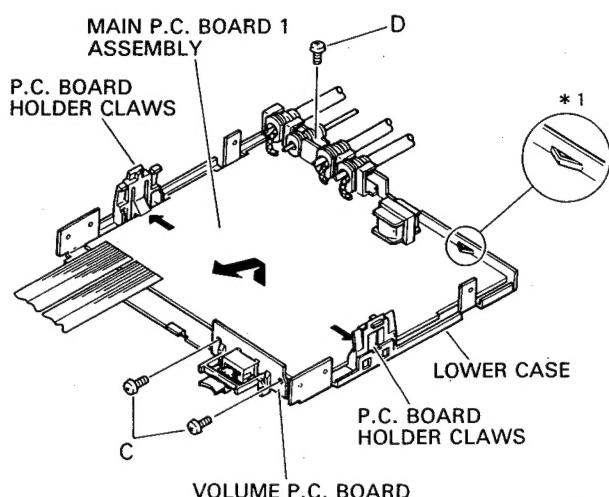


Fig. 8

## 5. ADJUSTMENT

### 5.1 Adjusting the Spectrum Analyzer Display LED

- Connection Diagram

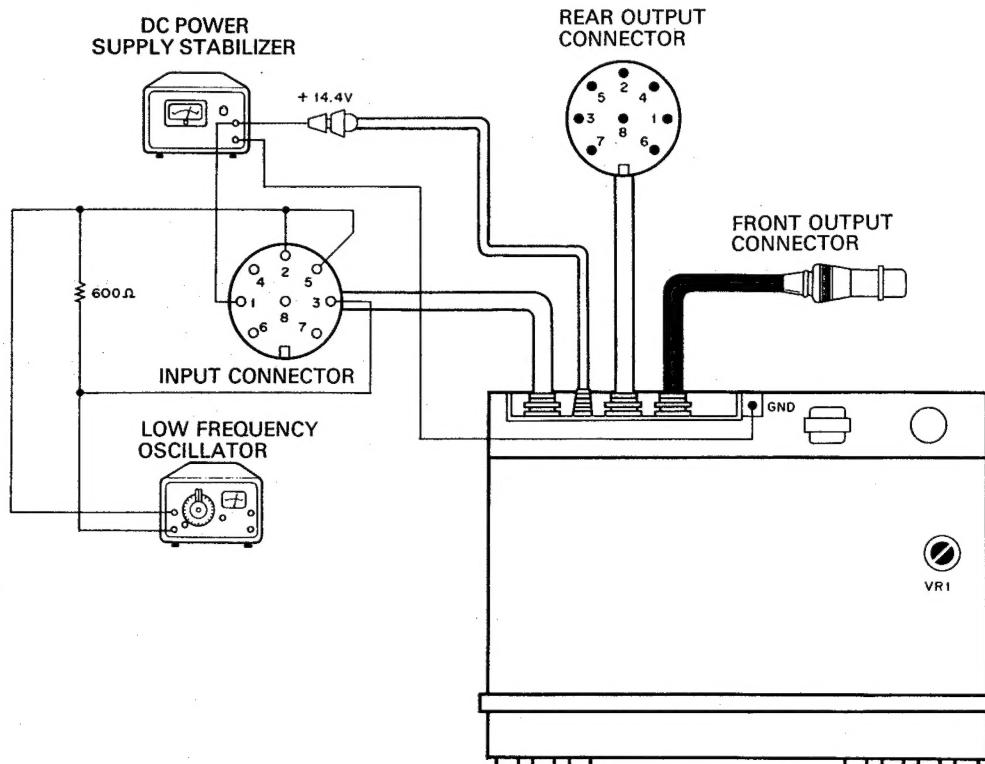


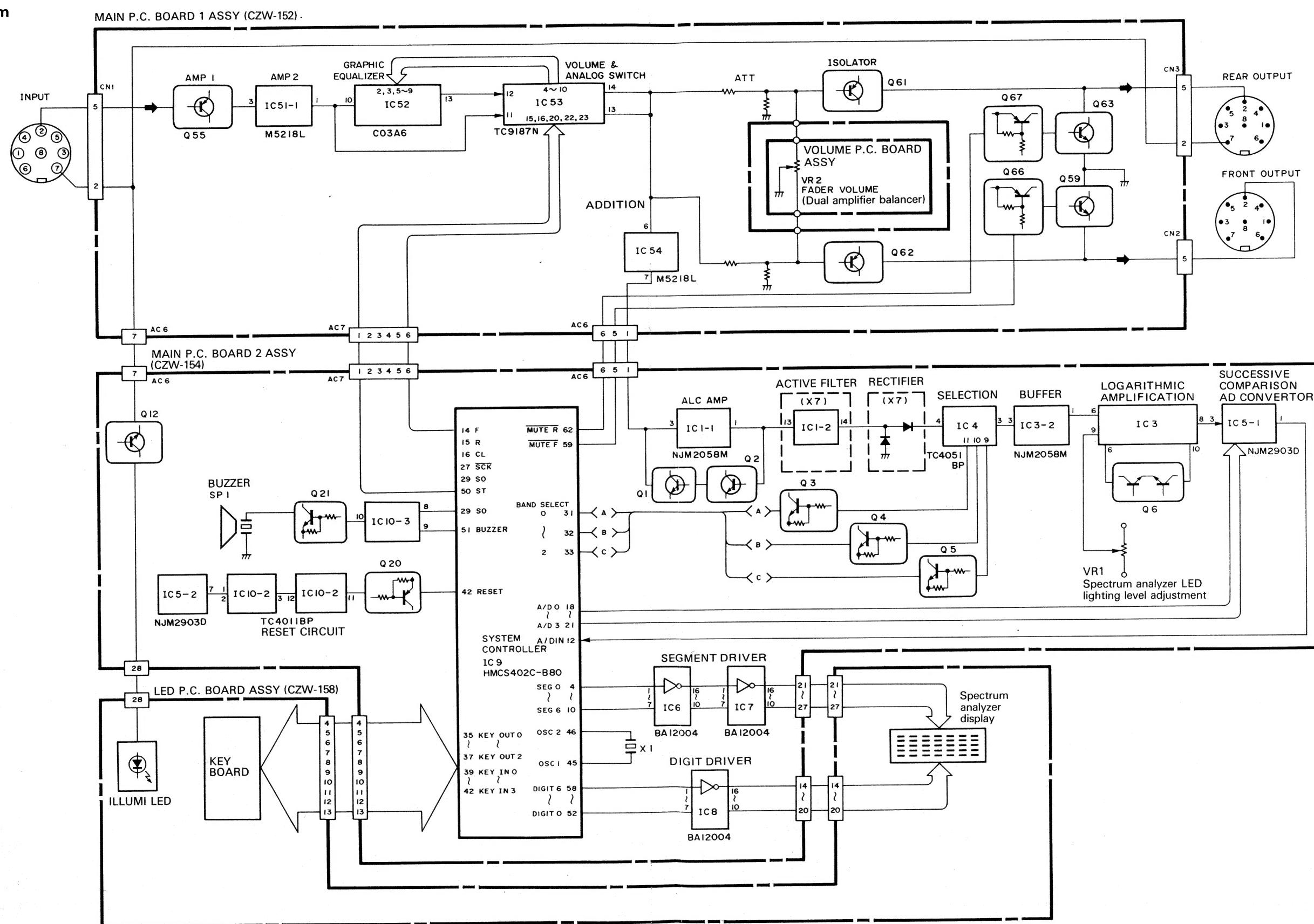
Fig. 9

- To Adjust

1. Set the fader (volume) control to the middle position and set the F and R switches to OFF.
2. Apply a 1kHz, -46 dBV (5.0mV) signal from the low frequency oscillator to the equalizer.
3. Adjust VR1 so that the LED on top of the spectrum analyzer display is lighted.

## 6. CIRCUIT DESCRIPTION

### • Block Diagram



• Signal Flow (Current) and Operation of Graphic Equalizer

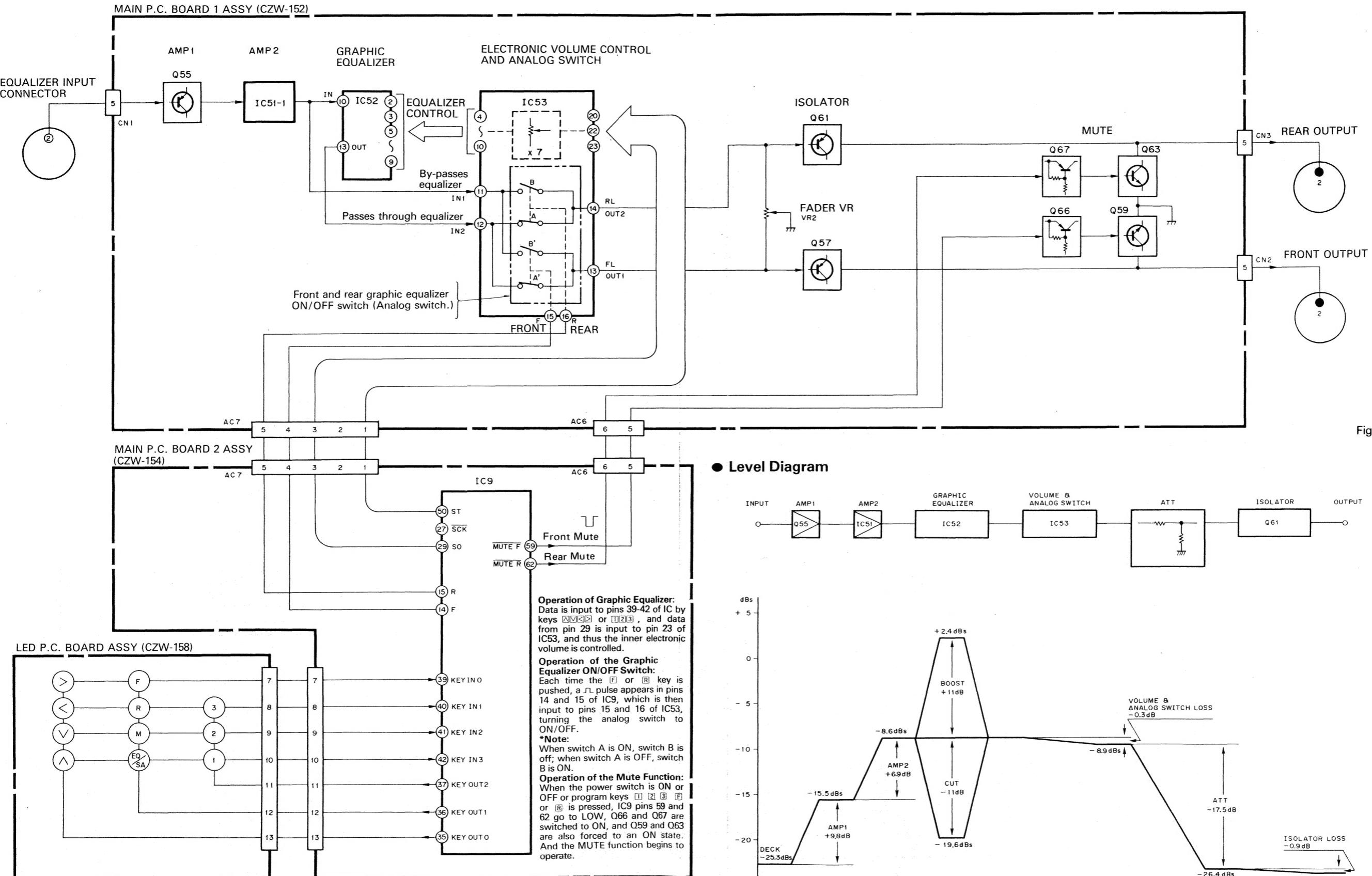


Fig. 11

• Level Diagram

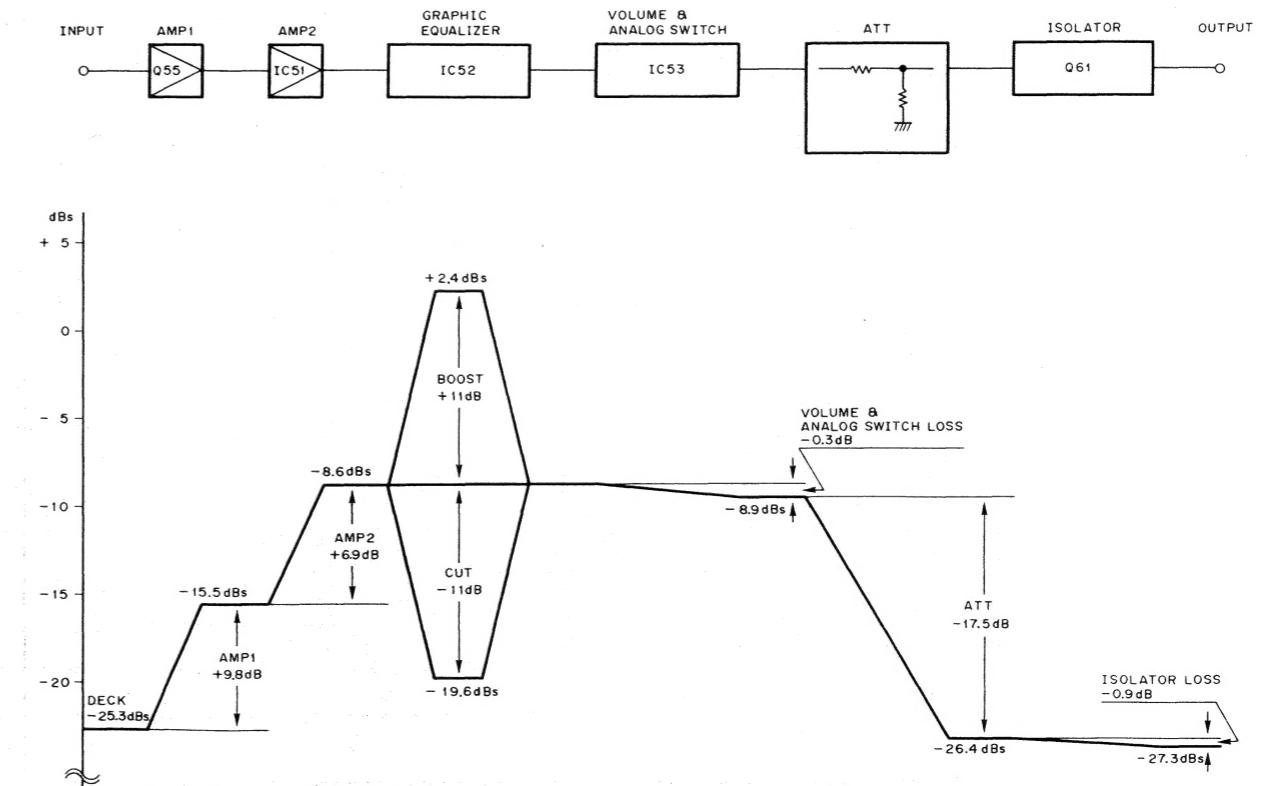
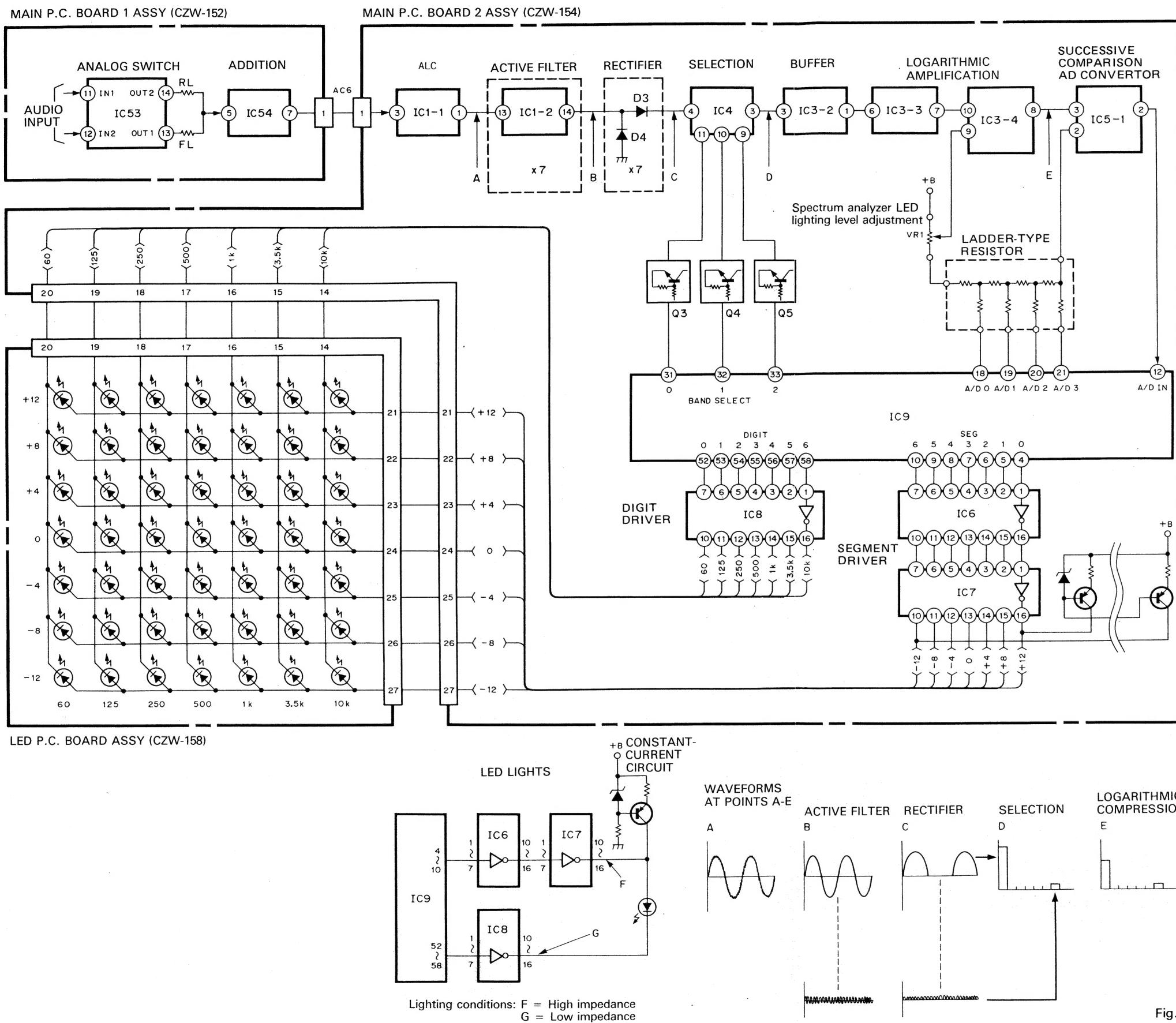


Fig. 12

### • Operation of the Spectrum Analyzer



The front and rear left and right signals from IC53 are added by IC54, and the ALC circuit (IC1-1) holds the output constant. The signal is divided into seven frequency bands (60Hz, 125Hz, 250Hz, 500Hz, 1kHz, 3.5kHz, 10kHz.) by active filters (IC1-2, 3, 4 and IC2-1, 2, 3, 4). The signal is then rectified by diodes D3-D16 and fetched as a direct current component. The direct current component of each frequency point is selected one by one by the selection circuit (IC4), and made into a step waveform proportional to its direct current component.

Then the signal passes through a buffer (IC3-2) and enters the logarithmic amplifier (IC3-3, 4). Because the data from the spectrum analyzer is displayed in dB, logarithmic compression must be carried out. The voltage applied to pin 2 of the AD convertor (IC5-1) is compared with the voltage input to pin 3. Then a 4-bit (16 step) digital signal is generated at pins 18-21 of IC9 to equalize the voltage of both pins (pin 2 and pin 3). The converted digital signal is processed by IC9 and lights the LED.

The VR1 connected to pin 9 of the logarithmic amplifier (IC3-4) changes the direct current level, which adjusts the lighting level of the spectrum analyzer.

Fig. 13

### • Block Diagram of Power Supply

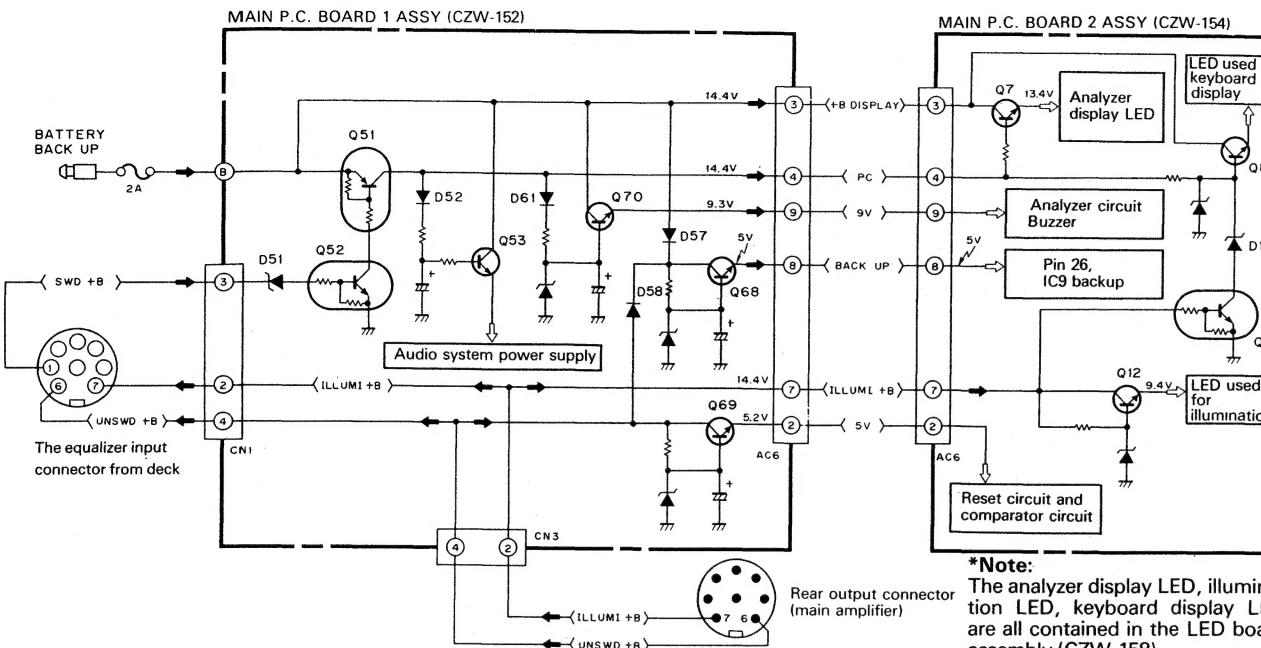


Fig. 14

When the power is off (i.e., the power is not supplied from unswitched +B of the main amplifier), only the backup power supply to Q68 is functioning—no other power is being supplied. Without the backup power supply, the unit will not function even when it is powered on.

When power is supplied to the unit, (i.e., power is supplied from the unswitched +B terminal of the main amplifier) and the switched +B voltage is applied to pin 1 of the equalizer input connector, both Q52 and Q51 turn on, generating a voltage to PC. This voltage activates Q7, Q8, Q53 and Q70, which

in turn supply voltage to each circuit. Q69 begins functioning when power is turned on.

Power is supplied to ILLUM +B through Q12. The ILLUM +B voltage is converted by Q9 from 5.3V to 3.8V and supplies power to the keyboard. This helps to dim the brightness of the keyboard display when the illuminator is on.

### • Reset circuit

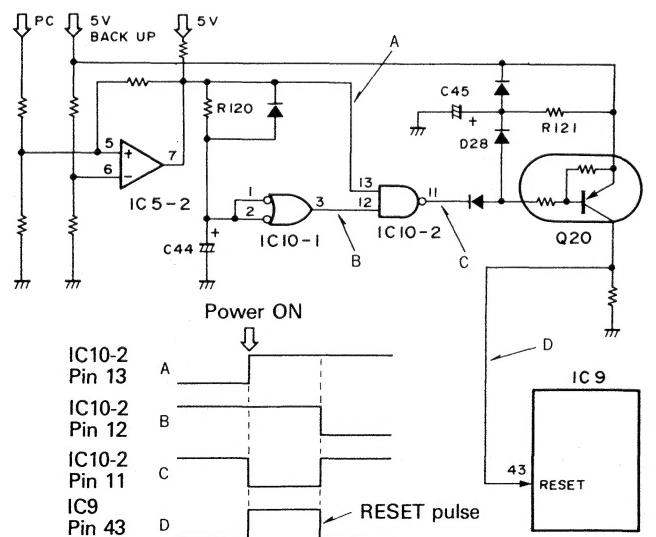
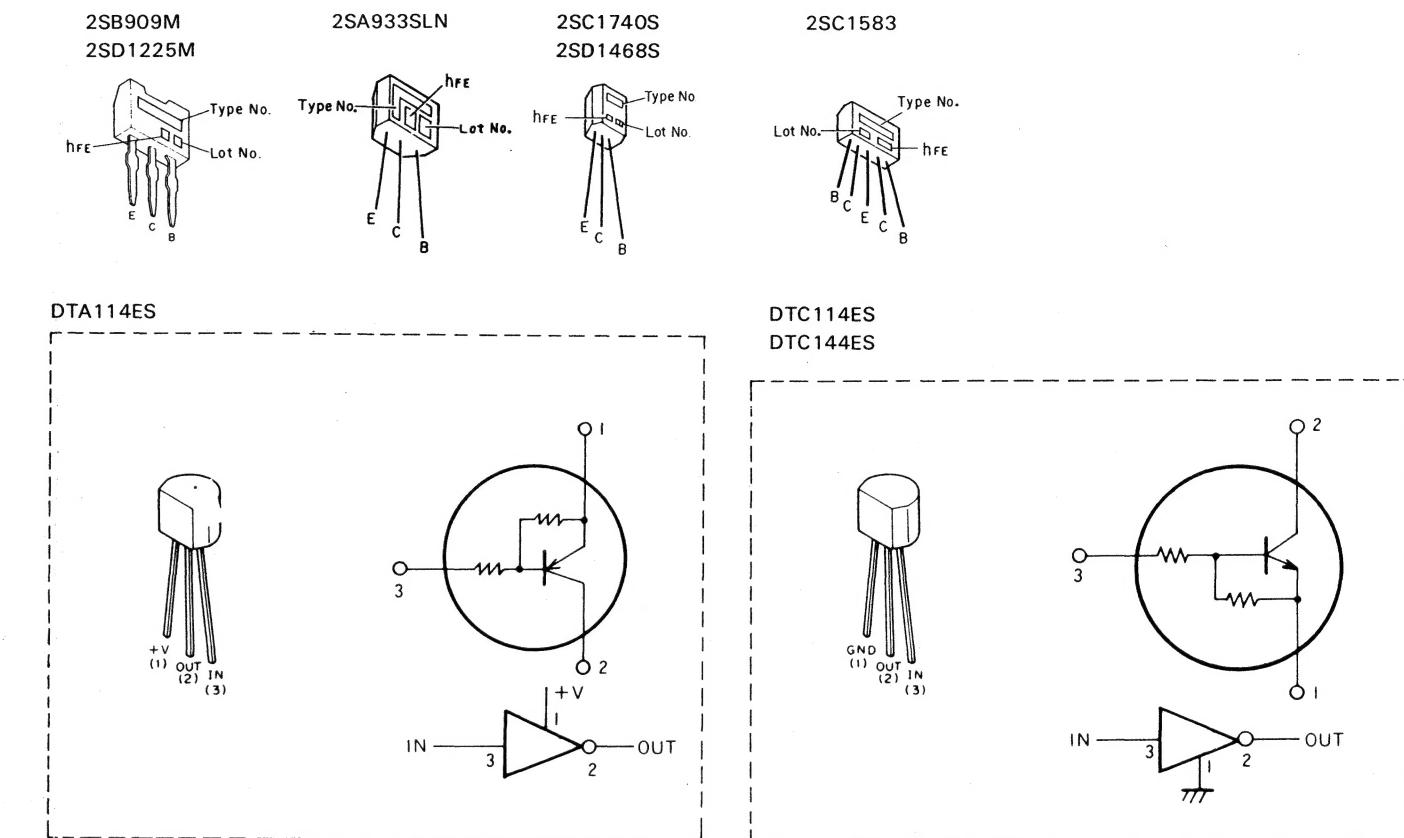
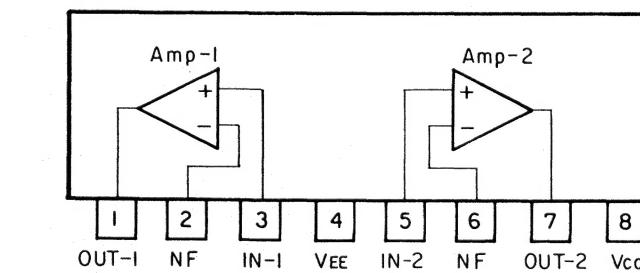


Fig. 15

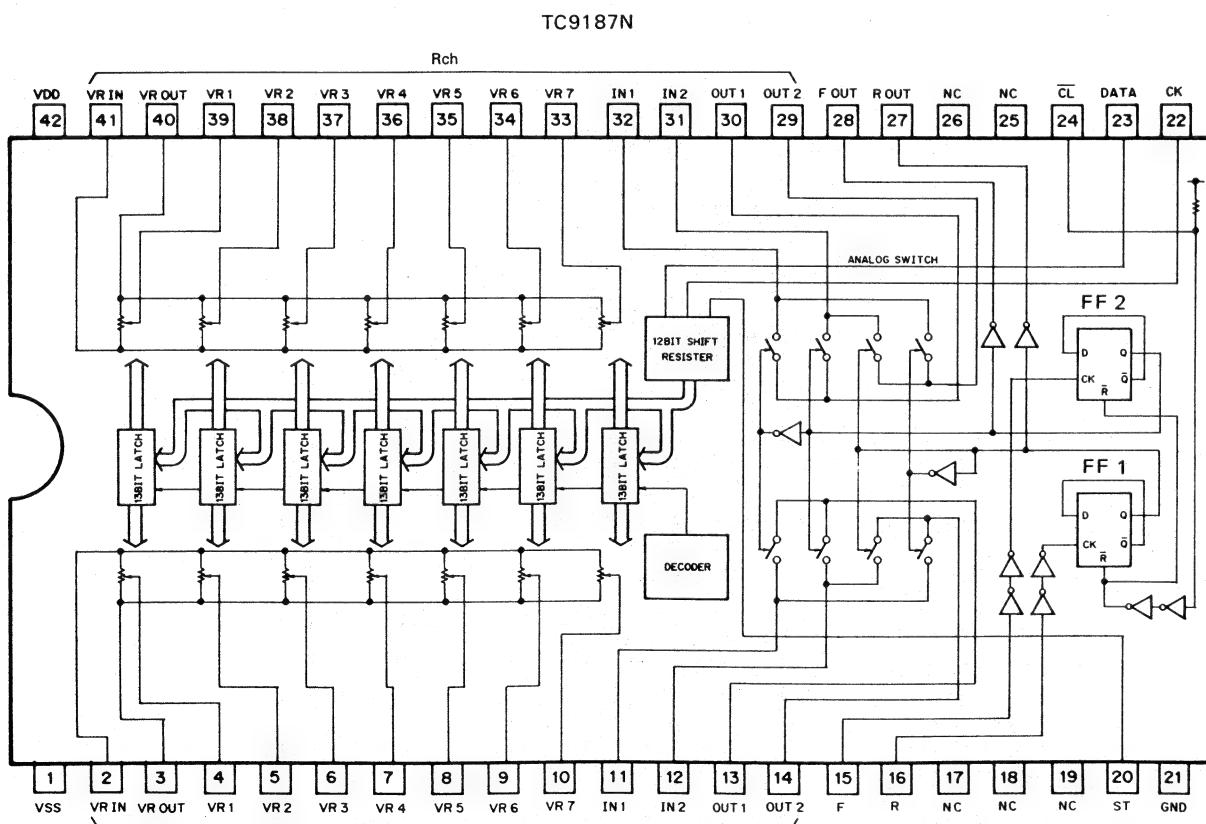
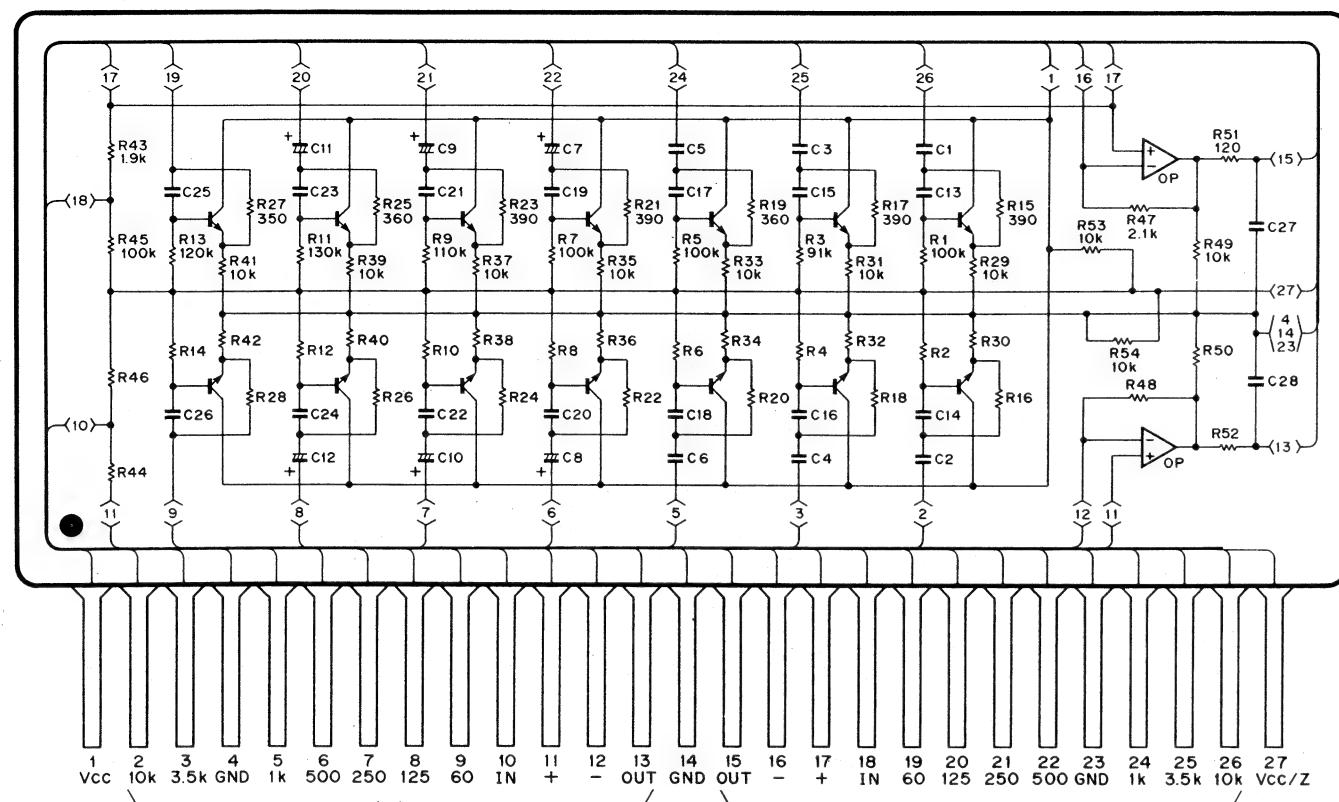
### • IC and transistors



M5218L



CO3A6

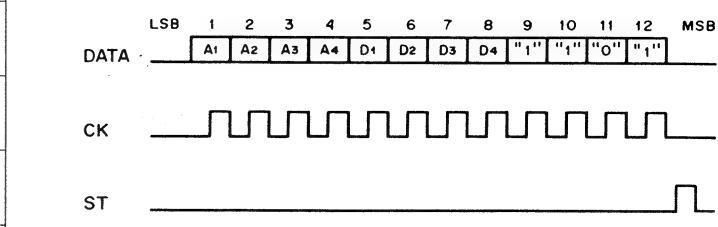


### • Pin Functions: (TC9187N)

| Pin            | Pin Name          | Function and Operation  |
|----------------|-------------------|---|
| 2<br>41        | (L)<br>(R) VRIN   | Common input pin for each volume control  |
| 3<br>40        | (L)<br>(R) VROUT  | Common output pin for each volume control   |
| 4<br>39        | (L)<br>(R) VR1    | Common pin for volume control 1<br>60Hz   |
| 5<br>38        | (L)<br>(R) VR2    | Common pin for volume control 2<br>125Hz  |
| 6<br>37        | (L)<br>(R) VR3    | Common pin for volume control 3<br>250Hz  |
| 7<br>36        | (L)<br>(R) VR4    | Common pin for volume control 4<br>500Hz  |
| 8<br>35        | (L)<br>(R) VR5    | Common pin for volume control 5<br>1kHz   |
| 9<br>34        | (L)<br>(R) VR6    | Common pin for volume control 6<br>3.5kHz   |
| 10<br>33       | (L)<br>(R) VR7    | Common pin for volume control 7<br>10kHz  |
| 11<br>32       | (L)<br>(R) IN1    | Input pin for the analog switch matrix<br>(Input pin for signals that by-pass the EQ circuit.)      |
| 12<br>31       | (L)<br>(R) IN2    | Input pin for the analog switch matrix<br>(Input pin for signals that pass through the EQ circuit.) |
| 13<br>30       | (L)<br>(R) OUT1   | Front left output pin<br>Front right output pin   |
| 14<br>29       | (L)<br>(R) OUT2   | Rear left output pin<br>Rear right output pin   |
| 15             | F                 | Input pin for analog switch control<br>(Turns the front equalizer circuit on and off)               |
| 16             | R                 | Input pin for analog switch control<br>(Turns the rear equalizer circuit on and off)                |
| 17~19<br>25~28 |                   | Not in use  |
| 20             | ST                | Strobe input pin. Control data at the CK pin and DATA pin is latched when this pin goes HIGH.       |
| 22             | CK                | Clock input pin.<br>Fetches control data  |
| 23             | DATA              | Control data input pin. Control data is made up of 12 bits.   |
| 24             | CL                | Clear input pin for the analog switch matrix. Turns the equalizer circuit off at a LOW level input. |
| 1<br>21<br>42  | VDD<br>GND<br>Vss | Power supply pin  |

\*Pins 15 and 16 are active HIGH. The states of FF1 and FF2 are reversed at the leading edge of these pins and turns the circuit on and off.

### • Control Data Format



#### a) A1-A4 (bits 1-4)

Data bits 1-4 select one of the seven volume control circuits denoted VR1-VR7.

| A1 | A2 | A3 | A4 | Volume |
|----|----|----|----|--------|
| H  | L  | L  | H  | VR1    |
| L  | H  | L  | H  | VR2    |
| H  | H  | L  | H  | VR3    |
| L  | L  | H  | H  | VR4    |
| H  | L  | H  | H  | VR5    |
| L  | H  | H  | H  | VR6    |
| H  | H  | H  | H  | VR7    |

#### b) D1-D4 (bits 5-8)

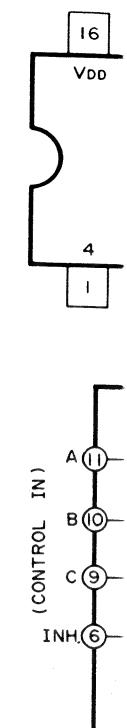
Data bits 5-8 set each volume step. Data bits 5-8 control the volume selected by A1-A4 in 13 steps.

| D1 | D2 | D3 | D4 | Step        |
|----|----|----|----|-------------|
| L  | H  | H  | L  | +6 (+12 dB) |
| H  | L  | H  | L  | +5 (+10 dB) |
| L  | L  | H  | L  | +4 (+8 dB)  |
| H  | H  | L  | L  | +3 (+6 dB)  |
| L  | H  | L  | L  | +2 (+4 dB)  |
| H  | L  | L  | L  | +1 (+2 dB)  |
| L  | L  | L  | L  | 0 (0 dB)    |
| H  | H  | H  | H  | -1 (-2 dB)  |
| L  | H  | H  | H  | -2 (-4 dB)  |
| H  | L  | H  | H  | -3 (-6 dB)  |
| L  | L  | H  | H  | -4 (-8 dB)  |
| H  | H  | L  | H  | -5 (-10 dB) |
| L  | H  | L  | H  | -6 (-12 dB) |

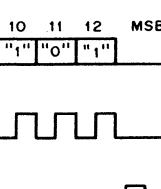
#### c) Codes Bits (bits 9-12)

Data bits 9-12 must match the code for TC9187N. Data is received only when these bits are as shown below.

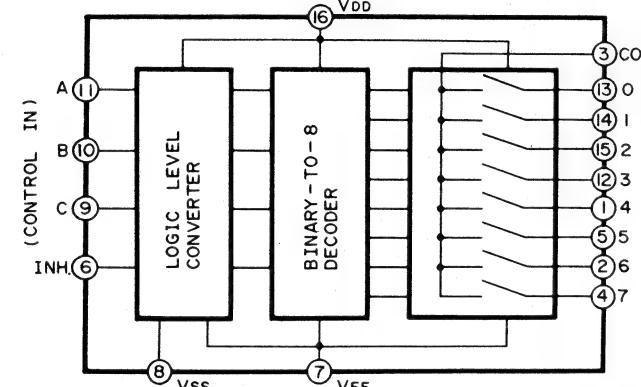
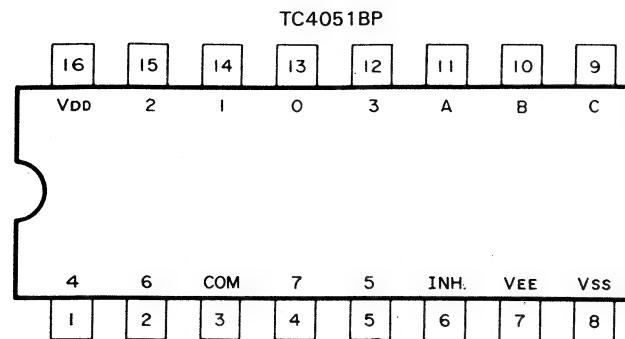
| 9 | 10 | 11 | 12 |
|---|----|----|----|
| H | H  | L  | H  |



IC's marked by \*are MOS type.  
Be careful in handling them because they are very liable to be damaged by electrostatic induction.



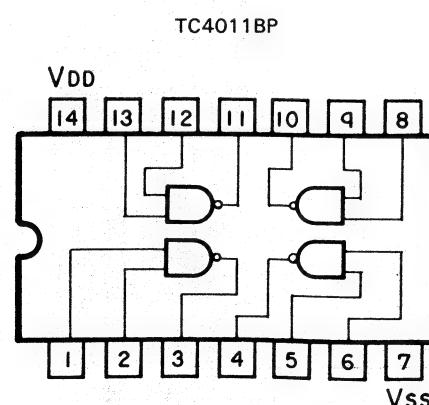
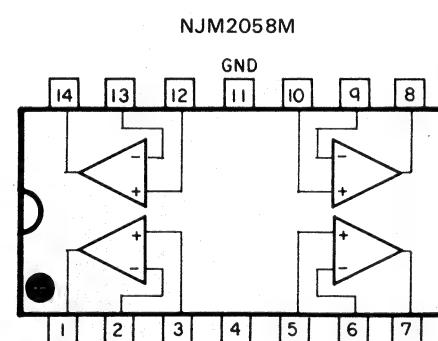
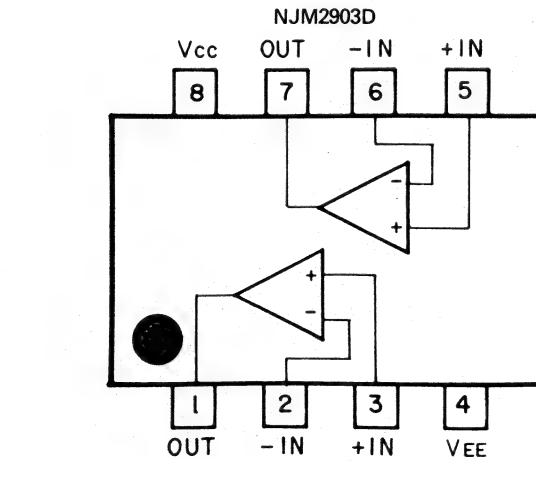
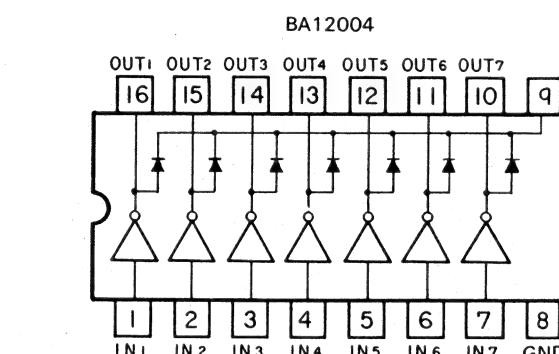
the control circuits



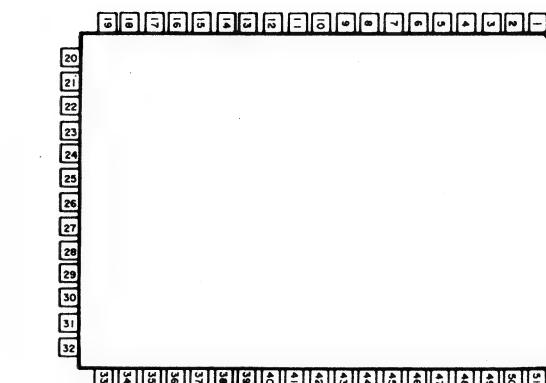
The TC4051BP is an 8 channel multiplexer capable of both selecting between the analog signal and digital signal and combining them. The switch corresponding to each of the 8 channels is turned on by the digital signal in the control pin.

| Control input signals |   |   |   | "ON" channel |
|-----------------------|---|---|---|--------------|
| INH                   | C | B | A |              |
| L                     | L | L | L | 0            |
| L                     | L | L | H | 1            |
| L                     | L | H | L | 2            |
| L                     | L | H | H | 3            |
| L                     | H | L | L | 4            |
| L                     | H | L | H | 5            |
| L                     | H | H | L | 6            |
| L                     | H | H | H | 7            |

When a HIGH level is input to INH, no channel turns on regardless of the state of the other inputs.



\*HMCS402C-B80



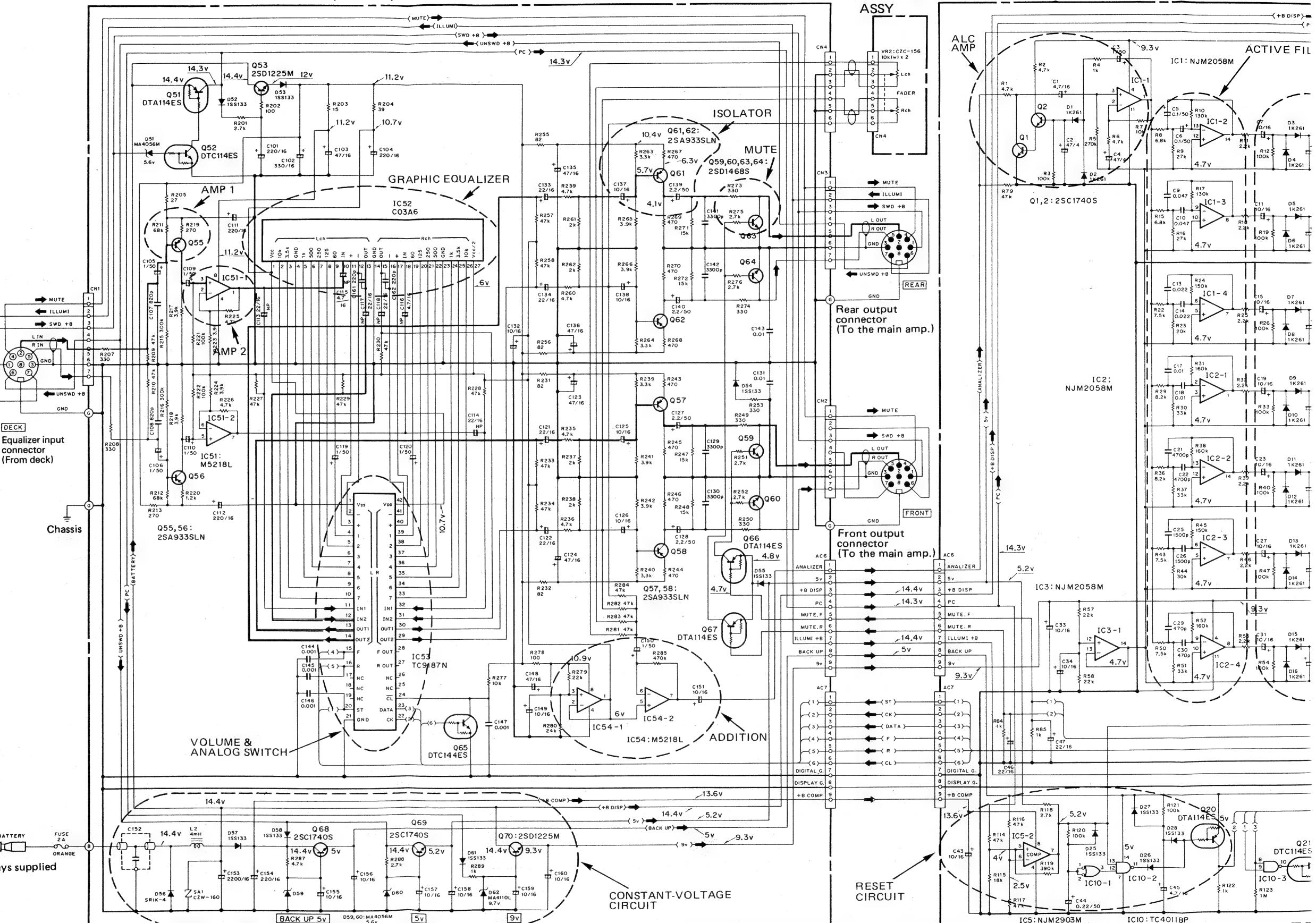
#### • Pin Function (HMCS402C-B80)

| Pin | Pin name   | I/O    | Function and Operation                 |
|-----|------------|--------|--|
| 1~3 |            |        | Unused                                 |
| 4   | SEG 0      | Output | Output for segment 0                   |
| 10  | SEG 6      | Output | Output for segment 6                   |
| 11  |            |        | Unused                                 |
| 12  | A/D IN     | Input  | For AD conversion<br>Data input        |
| 13  |            |        | Unused                                 |
| 14  | F          | Output | Output for front ON/OFF switch         |
| 15  | R          | Output | Output for rear ON/OFF switch          |
| 16  | CL         | Output | Turns both front and rear circuits OFF |
| 17  | POWER DOWN | Input  | Detects power failure                  |
| 18  | A/D 0      | Output | AD convertor output                    |
| 21  | A/D 3      | Output |  |
| 22  | M1 LED     | Output | LED for M1 key (Red)                   |
| 23  | M2 LED     | Output | LED for M2 key (Red)                   |
| 24  | M3 LED     | Output | LED for M3 key (Red)                   |
| 25  |            |        | Unused                                 |
| 26  | Vcc        |        | +5V                                    |
| 27  | SCK        | Output | Serial lock output                     |
| 28  |            |        | Unused                                 |
| 29  | SO         | Output | Serial out output                      |
| 30  |            |        | Unused                                 |

| Pin   | Pin name      | I/O    | Function and Operation                                |
|-------|---------------|--------|---|
| 31    | Band Select 0 | Output | Analyzer input band selection output                  |
| 32    | Band Select 2 | Output |   |
| 33    |               |        | Unused  |
| 34    |               |        |   |
| 35    | KEY OUT 0     | Output | Output for key matrix                                 |
| 36    | KEY OUT 1     | Output |   |
| 37    | KEY OUT 2     | Output |   |
| 38    |               |        | Unused  |
| 39    | KEY IN 0      | Input  | Input for key matrix                                  |
| 42    | KEY IN 3      | Input  |   |
| 43    | RESET         | Input  | Input RESET.<br>Reset with a HIGH level single pulse. |
| 44    | TEST          |        | Unused. Fixed to HIGH level                           |
| 45    | OSC 1         |        | Pins connected to ceramic oscillator                  |
| 46    | OSC 2         |        |   |
| 47    | GND           |        | GND pin   |
| 48,49 |               |        | Unused  |
| 50    | ST            | Output | Output for strobe to TC9187N (IC53)                   |
| 51    | BUZZER        | Output | Generates key sound.                                  |
| 52    | DIGIT 0       | Output | Outputs for digit 0 of display.                       |
| 58    | DIGIT 6       | Output | Outputs for digit 6 of display.                       |
| 59    | MUTE F        | Output | Mute output for front circuit                         |
| 60    | R LED         | Output | LED for key R   |
| 61    | F LED         | Output | LED for key F   |
| 62    | MUTE R        | Output | Mute output for rear circuit                          |
| 63,64 |               |        | Unused  |

## 7. SCHEMATIC CIRCUIT DIAGRAM

## MAIN P.C.BOARD 1 ASSY (CZW-152)



**Note:**  
Connectors are illustrated with their heads facing the direction indicated by the arrows.



**Always supplied**

7

8

9

10

11

12

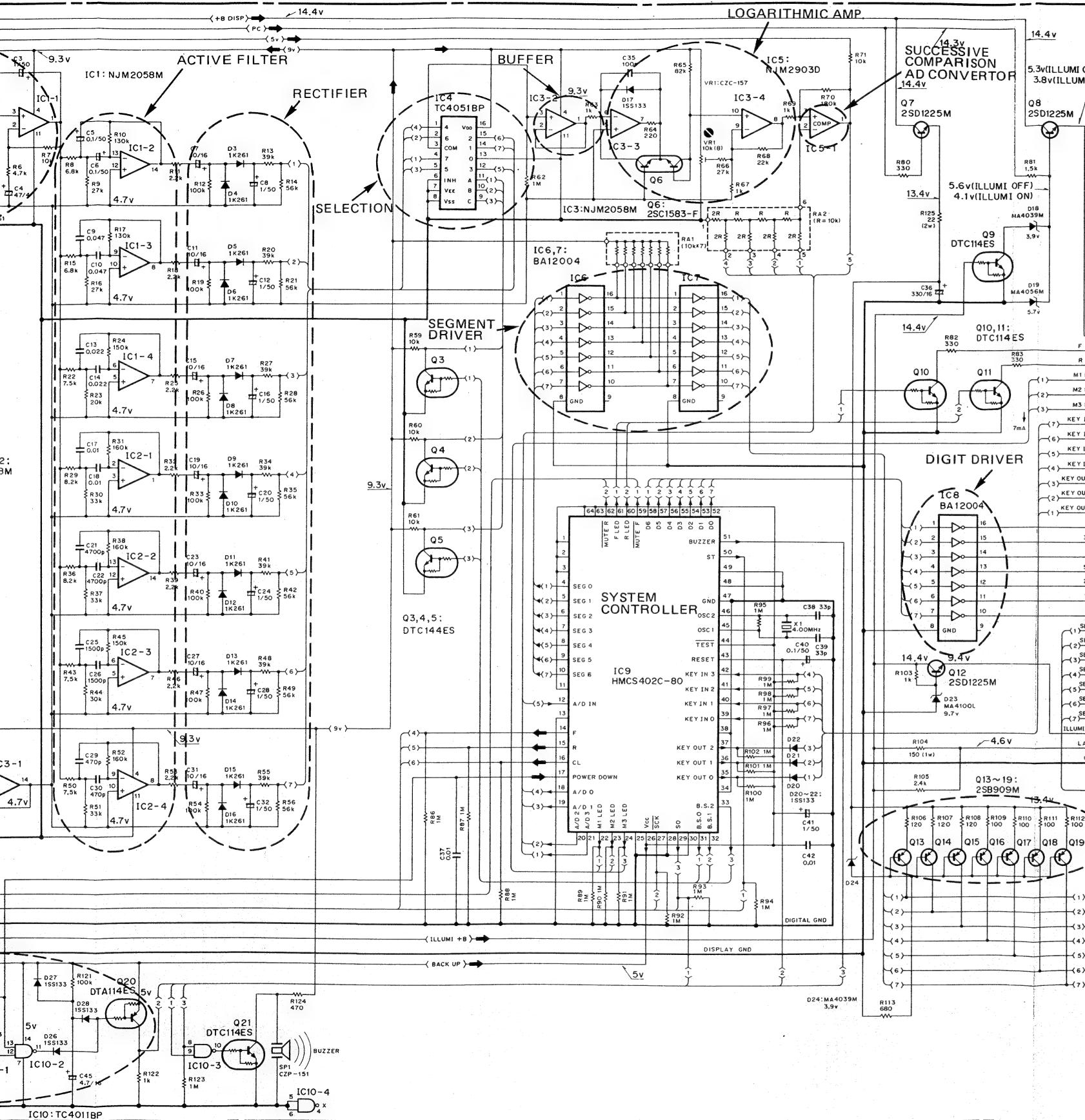
A

B

C

D

## MAIN P.C.BORD 2 ASSY (CZW-154)



## LED P.C.BORD ASSY (CZW-158)

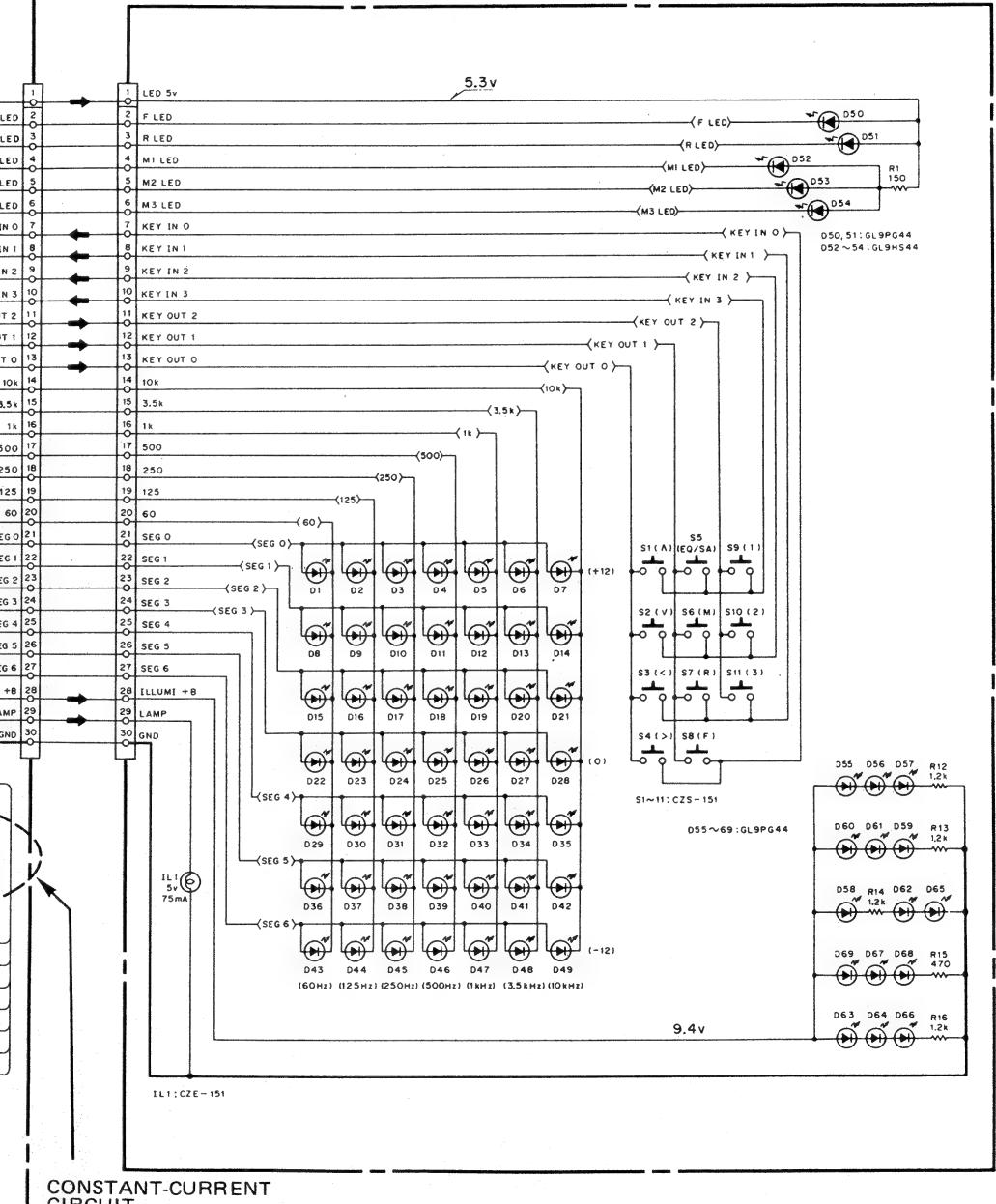


Fig. 16

1

2

3

4

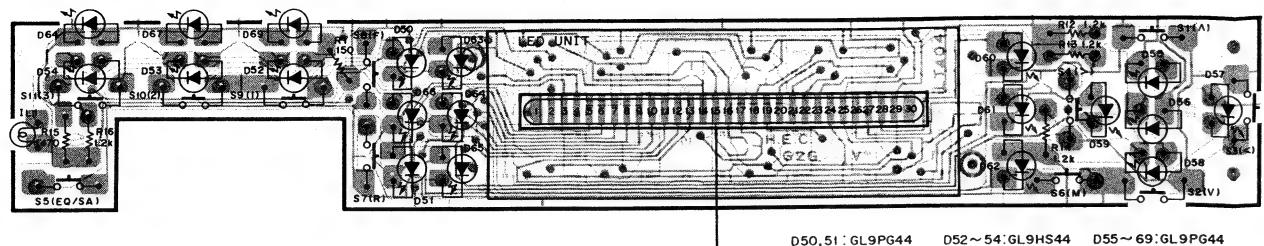
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6

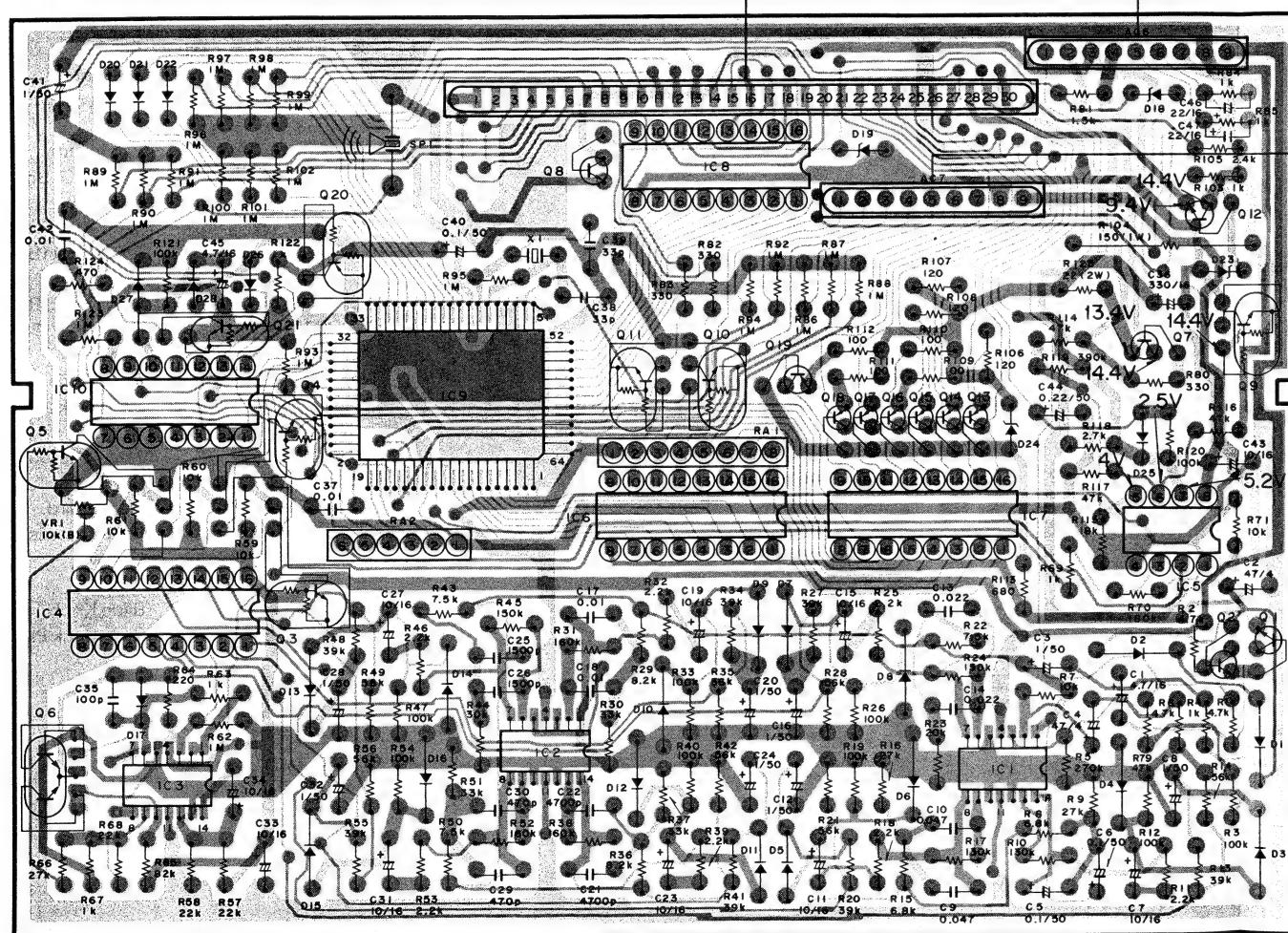
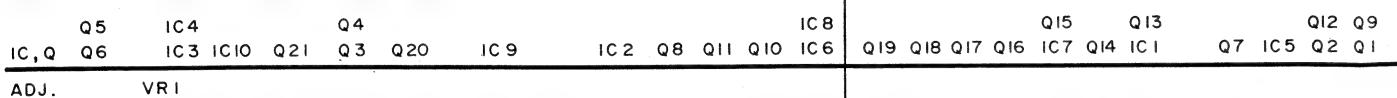
7

## 8. CONNECTION DIAGRAM

LED P.C.BOARD ASSY (CZW-158)



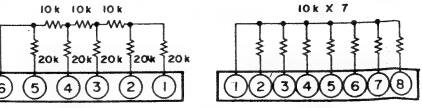
MAIN P.C.BOARD 2 ASSY (CZW-154)



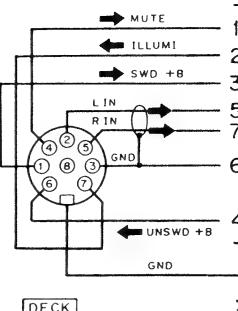
IC1~3 : NJM2058M  
IC4 : TC4051BP  
IC5 : NJM2903D  
IC6~8 : BAI2004  
IC9 : HMCS402-B80  
IC10 : TC4011BP

Q1, Q2 : 2SC1740S  
Q3~5, 9 : DTC144ES  
Q6 : 2SC1583-F  
Q7, 8, 12 : 2SD1225M  
Q10, 11, 21 : DTC114ES  
Q13~19 : 2SB909M  
Q20 : DTA114ES

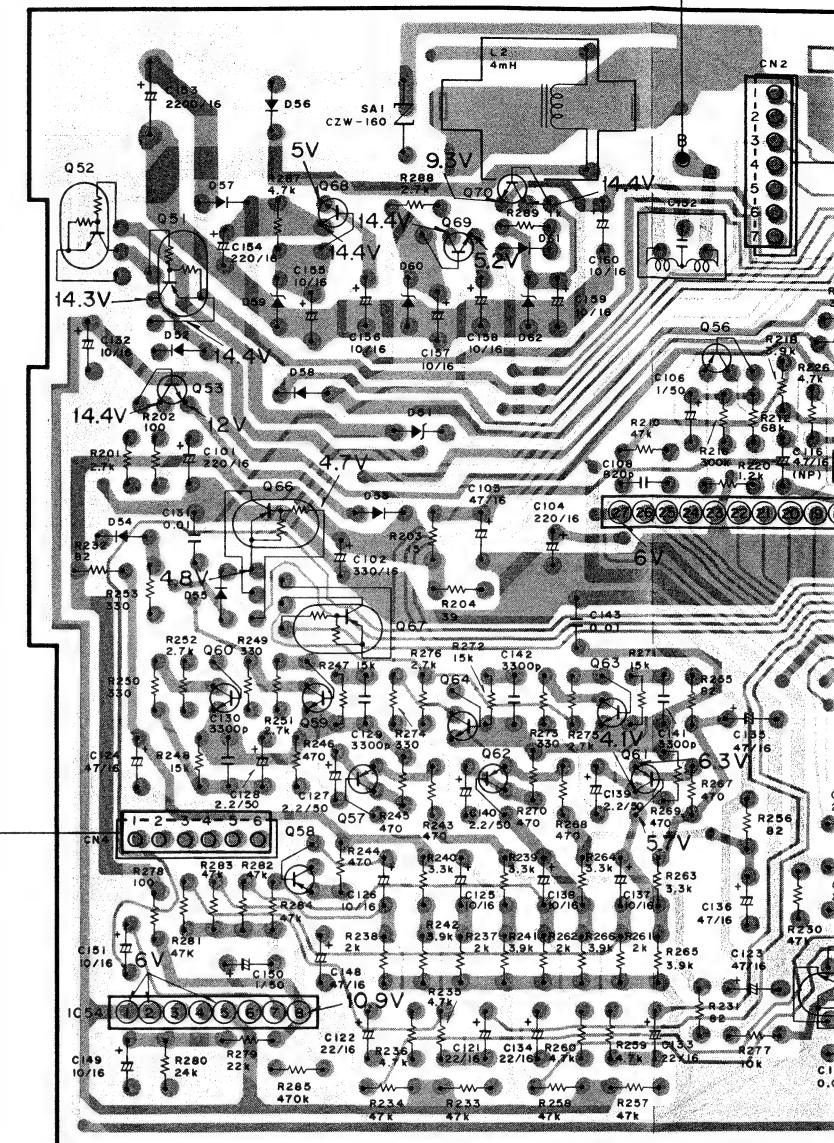
D1~16 : IK261  
D17, 20~22, 25~28 : ISS133  
D18 : MA4039M  
D19 : MA4056M  
D23 : MA4100L  
D24 : MA4039M



Q51 Q66 Q67 Q68 Q69 Q70  
Q52 IC54 Q53 Q60 Q58 Q59 Q57  
Q64 Q62 Q63 Q61 Q56 Q65

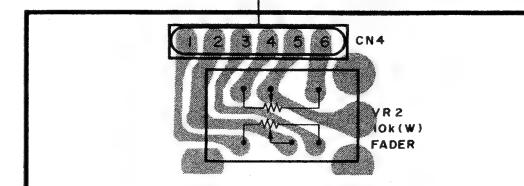


Equalizer input connector  
(From deck)



IC51, 54 : M5218L  
IC52 : C03A6  
IC53 : TC9187N  
Q51, 66, 67 : DTA114ES  
Q52 : DTC114ES  
Q53, 70 : 2SD1225M  
Q55~58, 61, 62 : 2SA933S  
Q59, 60, 63, 64 : 2SD1468S

VOLUME P.C. BOARD ASSY



MAIN P.C. BOARD 2 ASSY (CZW-154)

|     | 1 | 2 | 3 | 4   | 5   | 6   | 7   | 8 | 9 |
|-----|---|---|---|-----|-----|-----|-----|---|---|
| IC1 |   |   |   |     |     | 9.3 | 4.7 |   |   |
| IC2 |   |   |   | 4.7 | 9.3 | 4.7 |     |   |   |
| IC3 |   |   |   |     | 9.3 | 4.7 |     |   |   |



1

2

3

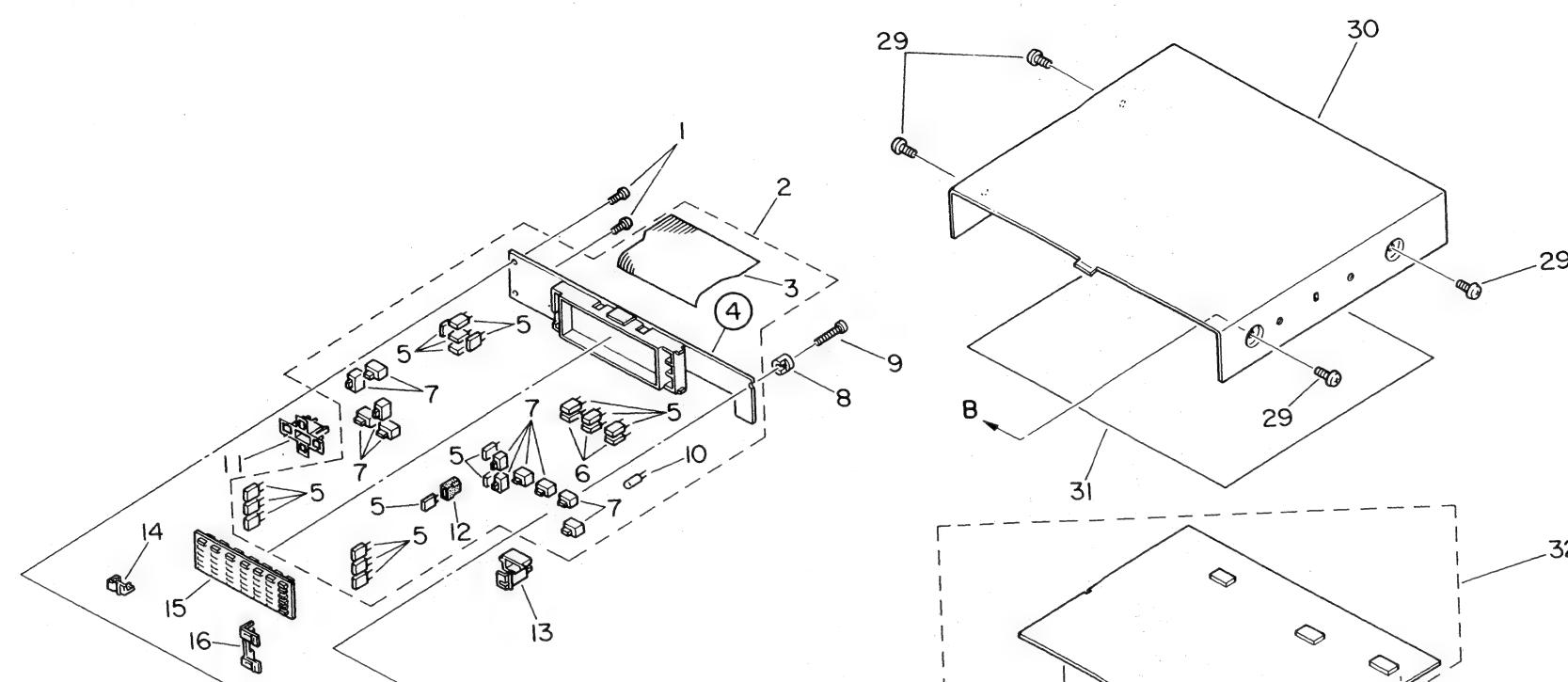
4

5

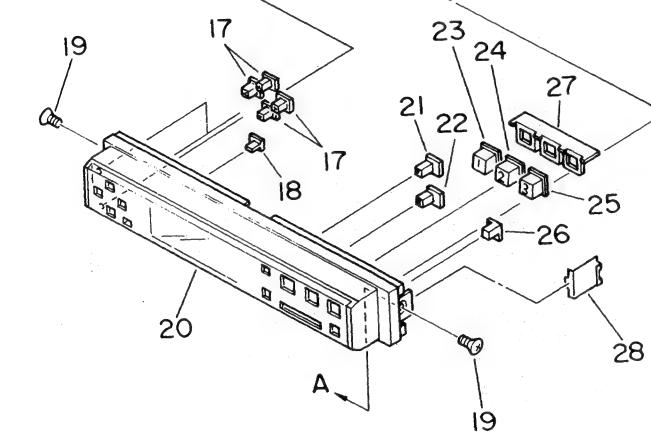
6

## 9. EXPLODED VIEW

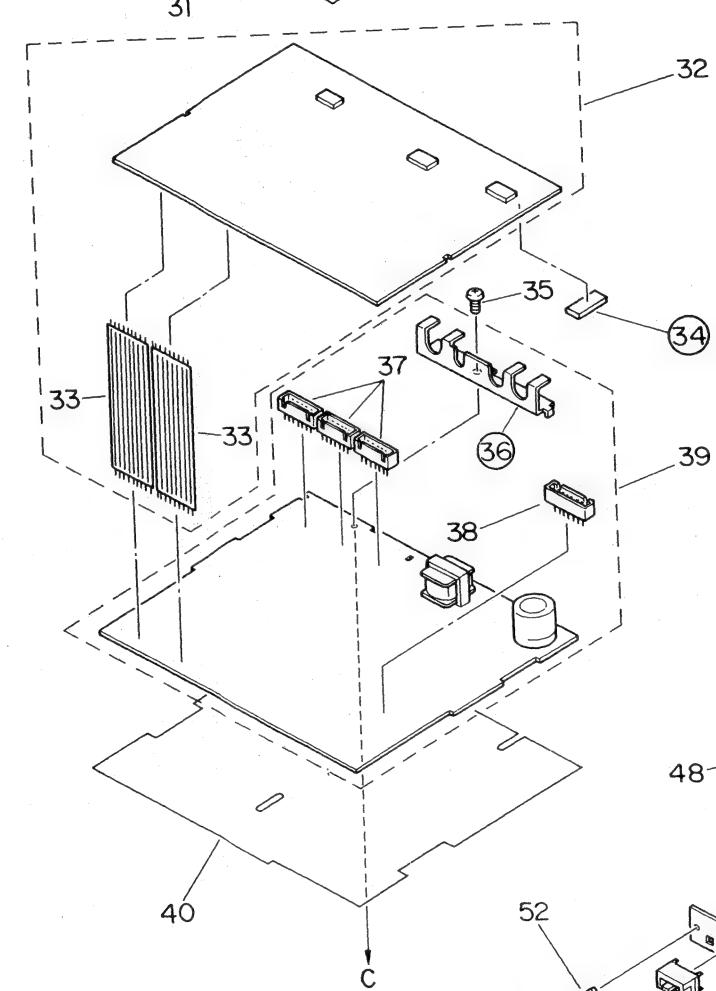
A



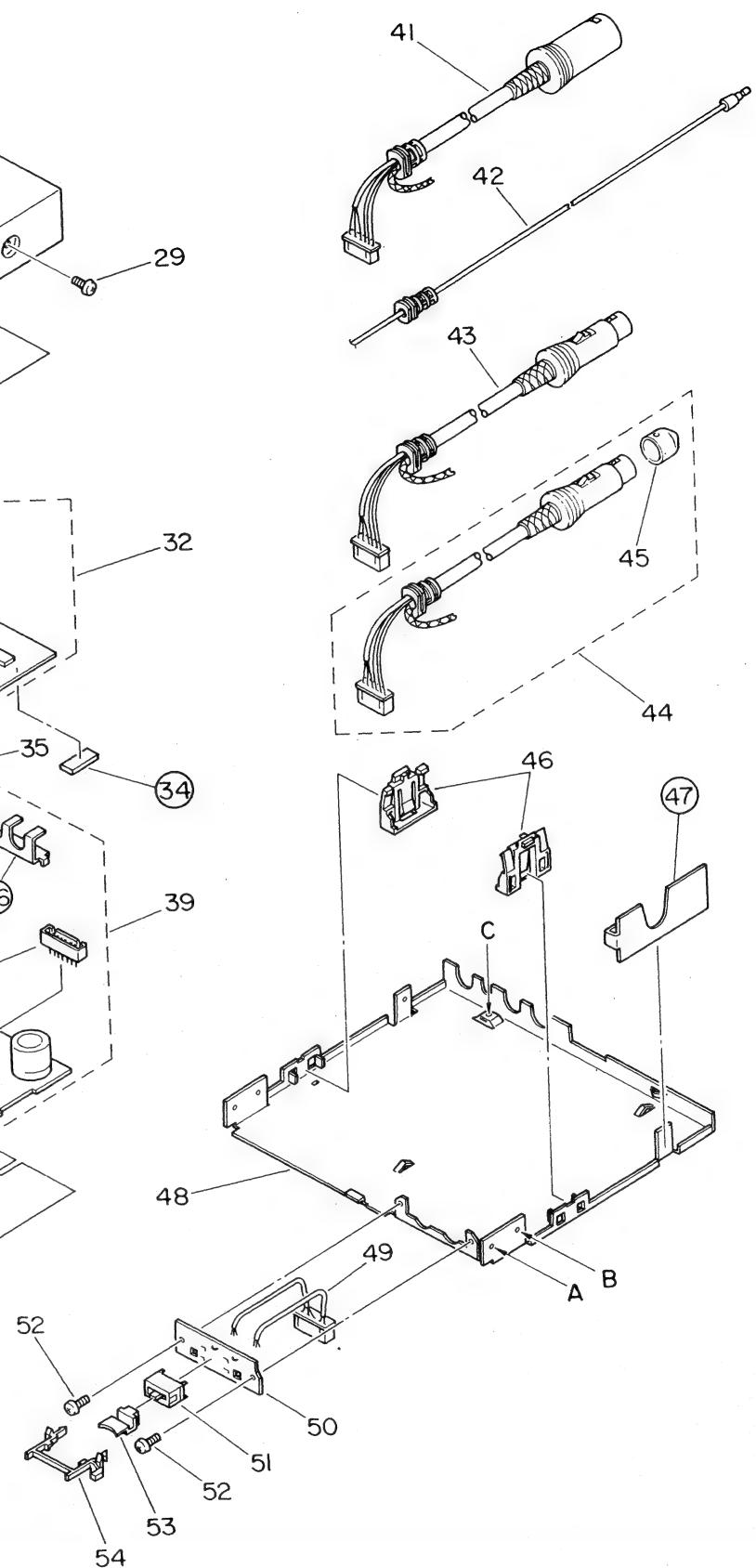
B



C



D



• Part  
NOTE  
• For  
★  
★  
Th  
nu.  
• Pa

Mark

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★  
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★★  
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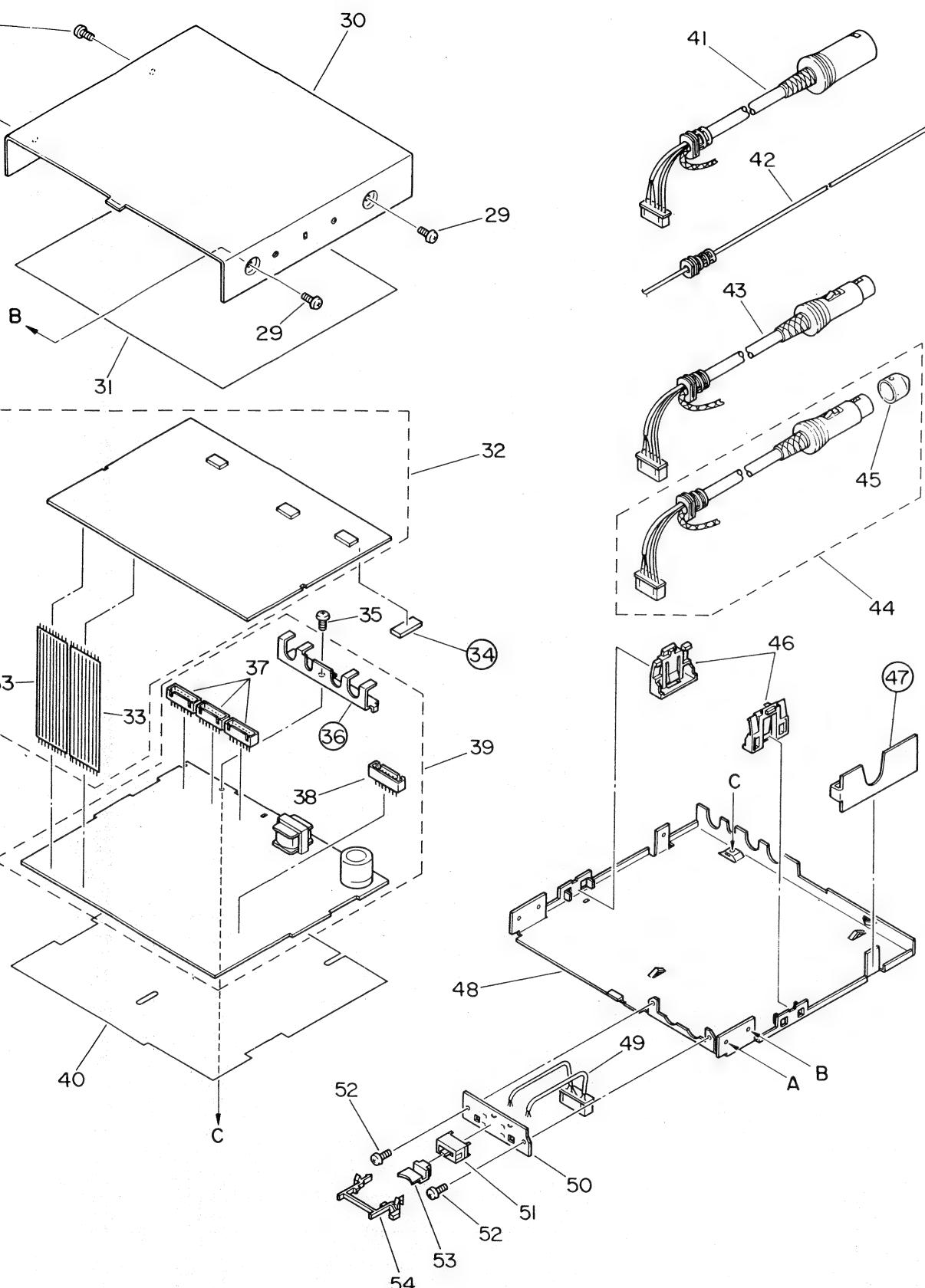
A

B

C

D

Fig. 18



- Parts List

***NOTE:***

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.  
★★: GENERALLY MOVES FASTER THAN ★.  
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
  - Parts whose parts numbers are omitted are subject to being not supplied.

| <b>Mark</b> | <b>No.</b> | <b>Part No.</b> | <b>Description</b>           | <b>Mark</b> | <b>No.</b> | <b>Part No.</b> | <b>Description</b>          |
|-------------|------------|-----------------|------------------------------|-------------|------------|-----------------|-----------------------------|
|             | 1.         | PPZ20P060FZN    | Screw                        |             |            | CBA-121         | Screw (EQ-E303/EW, ES)      |
|             | 2.         | CZW-158         | LED P.C. Board Assy          |             | 30.        | CZN-218         | Upper Case (EQ-E303(BK)/US) |
|             | 3.         | CZN-152         | P.C. Board                   |             |            | CZN-216         | Upper Case (EQ-E303/EW, ES) |
|             | 4.         |                 | LED Unit                     |             | 31.        | CZN-159         | Insulator                   |
| ★           | 5.         | GL9PG44         | LED                          |             | 32.        | CZW-154         | Main P.C. Board 2 Assy      |
| ★           | 6.         | GL9HS44         | LED                          |             | 33.        | CZK-153         | P.C. Joiner                 |
| ★★          | 7.         | CZS-151         | Switch                       |             | 34.        |                 | Sheet                       |
|             | 8.         | CZN-163         | Collar                       |             | 35.        | BMZ26P050FZN    | Screw                       |
|             | 9.         | PPZ20P100FZN    | Screw                        |             | 36.        |                 | Bracket                     |
| ★★          | 10.        | CZE-151         | Lamp, 75mA 5V                |             | 37.        | CZK-152         | Connector                   |
|             | 11.        | CZN-172         | Knob Holder A                |             | 38.        | CZK-151         | Connector                   |
|             | 12.        | CZN-166         | Spacer                       |             | 39.        | CZW-152         | Main P.C. Board 1 Assy      |
|             | 13.        | CZN-175         | Knob Holder E                |             | 40.        | CZN-161         | Insulator                   |
|             | 14.        | CZN-173         | Knob Holder B                |             | 41.        | CZD-167         | Cord Assy (INPUT)           |
|             | 15.        | CZX-161         | Lens Unit                    |             | 42.        | CZD-171         | Cord Assy (BACK UP)         |
|             | 16.        | CZN-174         | Knob Holder C                |             | 43.        | CZD-169         | Cord Assy (REAR OUTPUT)     |
| ★           | 17.        | CZA-166         | Push Knob A                  |             | 44.        | CZD-168         | Cord Assy (FRONT OUTPUT)    |
| ★           | 18.        | CZA-167         | Push Knob B                  |             | 45.        | CZN-178         | Cap                         |
|             | 19.        | CMZ26P040FZN    | Screw                        |             | 46.        | CZN-170         | PCB Holder                  |
|             | 20.        | CZX-152         | Grille Unit (EQ-E303(BK)/US) |             | 47.        |                 | Heat Sink                   |
|             |            | CZX-162         | Grille Unit (EQ-E303/EW, ES) |             | 48.        | CZN-160         | Lower Case                  |
| ★           | 21.        | CZA-168         | Push Knob CF                 |             | 49.        | CZD-151         | Connector                   |
| ★           | 22.        | CZA-169         | Push Knob CR                 |             | 50.        | CZN-151         | P.C. Board                  |
| ★           | 23.        | CZA-170         | Push Knob D1                 | ★★          | 51.        | CZC-156         | Slide Volume, 10kΩ(W)       |
| ★           | 24.        | CZA-171         | Push Knob D2                 |             | 52.        | BMZ26P050FZN    | Screw                       |
| ★           | 25.        | CZA-172         | Push Knob D3                 | ★           | 53.        | CZA-159         | Slide Knob                  |
| ★           | 26.        | CZA-173         | Push Knob E                  |             | 54.        | CZN-164         | Slide Back Plate            |
|             | 27.        | CZN-176         | Knob Holder D                |             |            |                 |                             |
|             | 28.        | CZN-162         | Heat Barrier                 |             |            |                 |                             |
|             | 29.        | CBA-178         | Screw (EQ-E303(BK)/US)       |             |            |                 |                             |

Fig. 18

## 10. ELECTRICAL PARTS LIST

### NOTE:

*When ordering resistors, first convert resistance values into code form as shown in the following examples.*

**Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).**

|      |                  |     |         |         |
|------|------------------|-----|---------|---------|
| 560Ω | $56 \times 10^1$ | 561 | RD1/4PS | 5 6 1 J |
| 47kΩ | $47 \times 10^3$ | 473 | RD1/4PS | 4 7 3 J |
| 0.5Ω | 0R5              |     | RN2H    | 0 R 5 K |
| 1Ω   | 010              |     | RS1P    | 0 1 0 K |

**Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).**  
**5.62kΩ     $562 \times 10^3$  ..... RN1/4SR 5 6 2 1 F**

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★: GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

- Parts whose parts numbers are omitted are subject to being not supplied.

### Main P.C. Board 1 Assy (CZW-152)

#### MISCELLANEOUS

| Mark | Symbol & Description | Part No.       |
|------|----------------------|----------------|
| ★★   | IC51, 54             | M5218L         |
| ★★   | IC52                 | C03A6          |
| ★★   | IC53                 | TC9187N        |
| ★★   | Q51, 66, 67          | DTA114ES       |
| ★★   | Q52                  | DTC114ES       |
| ★★   | Q53, 70              | 2SD1225M       |
| ★★   | Q55 – 58, 61, 62     | 2SA933SLN      |
| ★★   | Q59, 60, 63, 64      | 2SD1468S       |
| ★★   | Q65                  | DTC144ES       |
| ★★   | Q68, 69              | 2SC1740S       |
| ★    | D51, 59, 60          | MA4056M        |
| ★    | D52 – 55, 57, 58, 61 | 1SS133         |
| ★    | D56                  | SR1K-4         |
| ★    | D62                  | MA4110L        |
| ★    | SA1                  | Surge Absorber |
| L2   | Choke Coil, 4mH      | CZW-160        |

#### CAPACITORS

| Mark | Symbol & Description                  | Part No.    |
|------|---------------------------------------|-------------|
| C101 | 104, 111, 112, 154                    | CEA221M16LS |
| C102 |                                       | CEA331M16L2 |
| C103 | 123, 124, 135, 136, 148               | CEA470M16LS |
| C105 | 106, 109, 110, 119, 120, 150          | CEA010M50LS |
| C107 | 108                                   | CKDYB821K50 |
| C113 | 114, 117, 118                         | CZC-154     |
|      | $22\mu\text{F}/16\text{V}(\text{NP})$ |             |
| C115 | 116                                   | CZC-155     |
| C121 | 122, 133, 134                         | CEA220M16LS |
| C125 | 126, 137, 138, 149, 151, 155 – 160    | CEA100M16LS |
| C127 | 128, 139, 140                         | CEA2R2M50LS |
| C129 | 130, 141, 142                         | CQMAH332J50 |
| C131 | 143                                   | CKDYZ103Z50 |
| C144 | – 147                                 | CKDYZ102M50 |
| C152 |                                       | CZC-153     |
| C153 | $2200\mu\text{F}/16\text{V}$          | CZC-152     |
| C161 | 162                                   | CKDYB221K50 |

#### RESISTORS

| Mark          | Symbol & Description | Part No.    |
|---------------|----------------------|-------------|
| All Resistors |                      | RD1/4PS□□□J |

**Main P.C. Board 2 Assy (CZW-154)****MISCELLANEOUS**

| Mark | Symbol & Description  | Part No.            |
|------|-----------------------|---------------------|
| ★ ★  | IC1 — 3               | NJM2058M            |
| ★ ★  | IC4                   | TC4051BP            |
| ★ ★  | IC5                   | NJM2903D            |
| ★ ★  | IC6 — 8               | BA12004             |
| ★ ★  | IC9                   | HMCS402C-B80        |
| ★ ★  | IC10                  | TC4011BP            |
| ★ ★  | Q1, 2                 | 2SC1740S            |
| ★ ★  | Q3 — 5, 9             | DTC144ES            |
| ★ ★  | Q6                    | 2SC1583-F           |
| ★ ★  | Q7, 8, 12             | 2SD1225M            |
| ★ ★  | Q10, 11, 21           | DTC114ES            |
| ★ ★  | Q13 — 19              | 2SB909M             |
| ★ ★  | Q20                   | DTA114ES            |
| ★    | D1 — 16               | 1K261               |
| ★    | D17, 20 — 22, 25 — 28 | 1SS133              |
| ★    | D18, 24               | MA4039M             |
| ★    | D19                   | MA4056M             |
| ★    | D23                   | MA4100L             |
| RA1  | Resistor Array        | CZW-163             |
| RA2  | Resistor Array        | CZW-164             |
| ★ ★  | VR1                   | Semi-fixed, 10kΩ(B) |
| X1   |                       | CZC-157             |
| SP1  | Ceramic Oscillator    | CZS-152             |
|      | Buzzer                | CZP-151             |

**RESISTORS**

| Mark            | Symbol & Description | Part No.    |
|-----------------|----------------------|-------------|
| R104            |                      | RN1P□□□J    |
| R125            |                      | RT2B□□□K    |
| Other Resistors |                      | RD1/4PS□□□J |

**CAPACITORS**

| Mark | Symbol & Description                   | Part No.     |
|------|--|--------------|
|      | C1, 45                                 | CEA4R7M16LS  |
|      | C2, 4                                  | CEA470M4LS   |
|      | C3, 8, 12, 16, 20, 24, 28, 34, 41      | CEA010M50LS  |
|      | C5, 6, 40                              | CEA0R1M50LS  |
|      | C7, 11, 15, 19, 23, 27, 31, 33, 34, 43 | CEA100M16LS  |
|      | C9, 10                                 | CQFAH473J50L |
|      | C13, 14                                | CQFAH223J50L |
|      | C17, 18                                | CQMAH103J50  |
|      | C21, 22                                | CQMAH472J50  |
|      | C25, 26                                | CQMAH152J50  |
|      | C29, 30                                | CCDYB471K50  |
|      | C35                                    | CCDSL101K50  |
|      | C36                                    | CEA331M16L2  |
|      | C37, 42                                | CKDYF103Z50  |
|      | C38, 39                                | CCDSL330K50  |
|      | C44                                    | CEAR22M50LS  |
|      | C46, 47                                | CEA220M16LS  |

**LED P.C. Board Assy (CZW-158)**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D50, 51, 55 — 69 LED | GL9PG44  |
| ★    | D52 — 54 LED         | GL9HS44  |
| ★ ★  | IL1 Lamp, 75mA 5V    | CZE-151  |
| ★ ★  | S1 — 11 Switch       | CZS-151  |

**Volume P.C. Board Assy**

| Mark | Symbol & Description      | Part No. |
|------|---------------------------|----------|
| ★ ★  | VR2 Slide Volume, 10kΩ(W) | CZC-156  |

## 11. PACKING METHOD

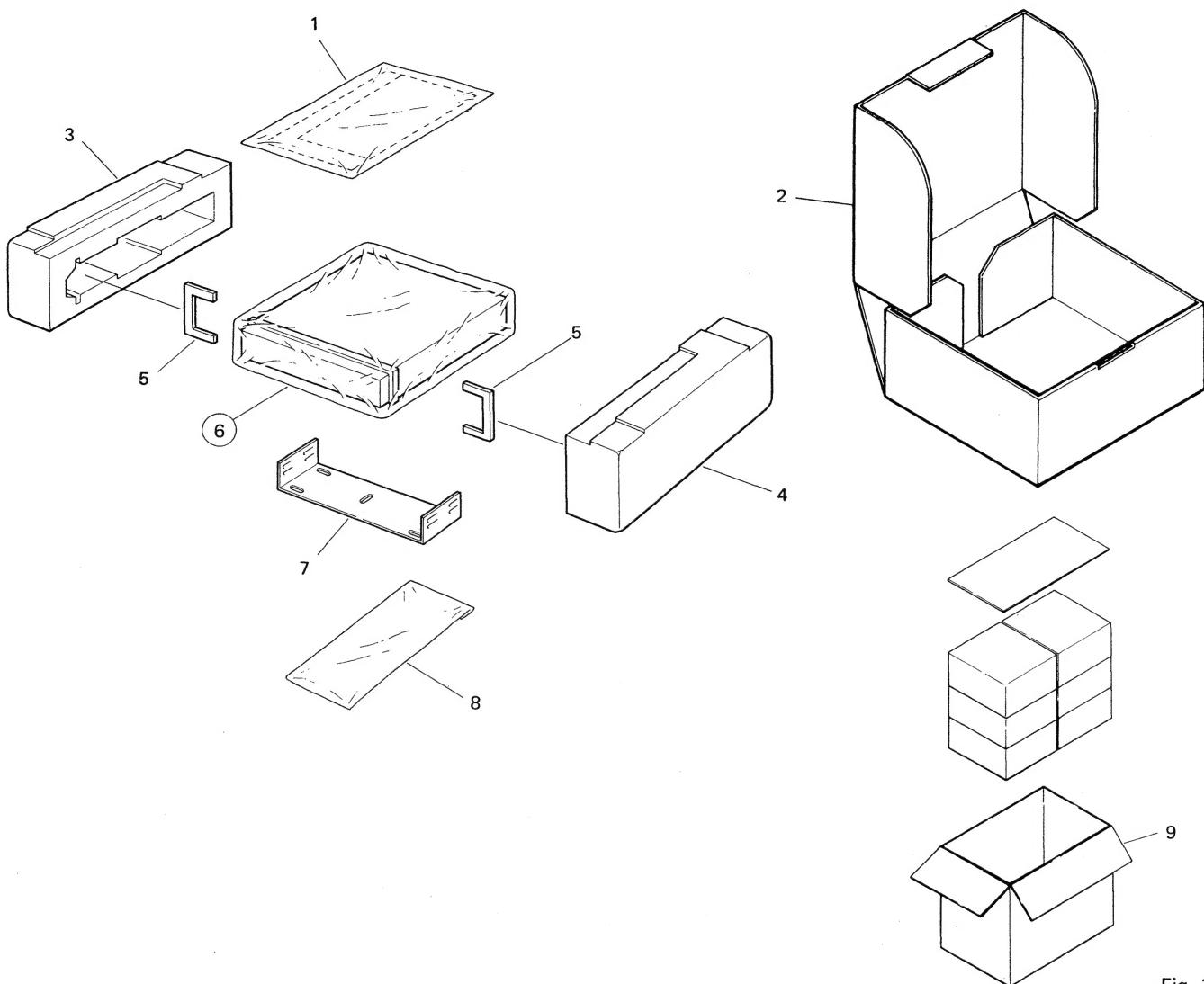


Fig. 19

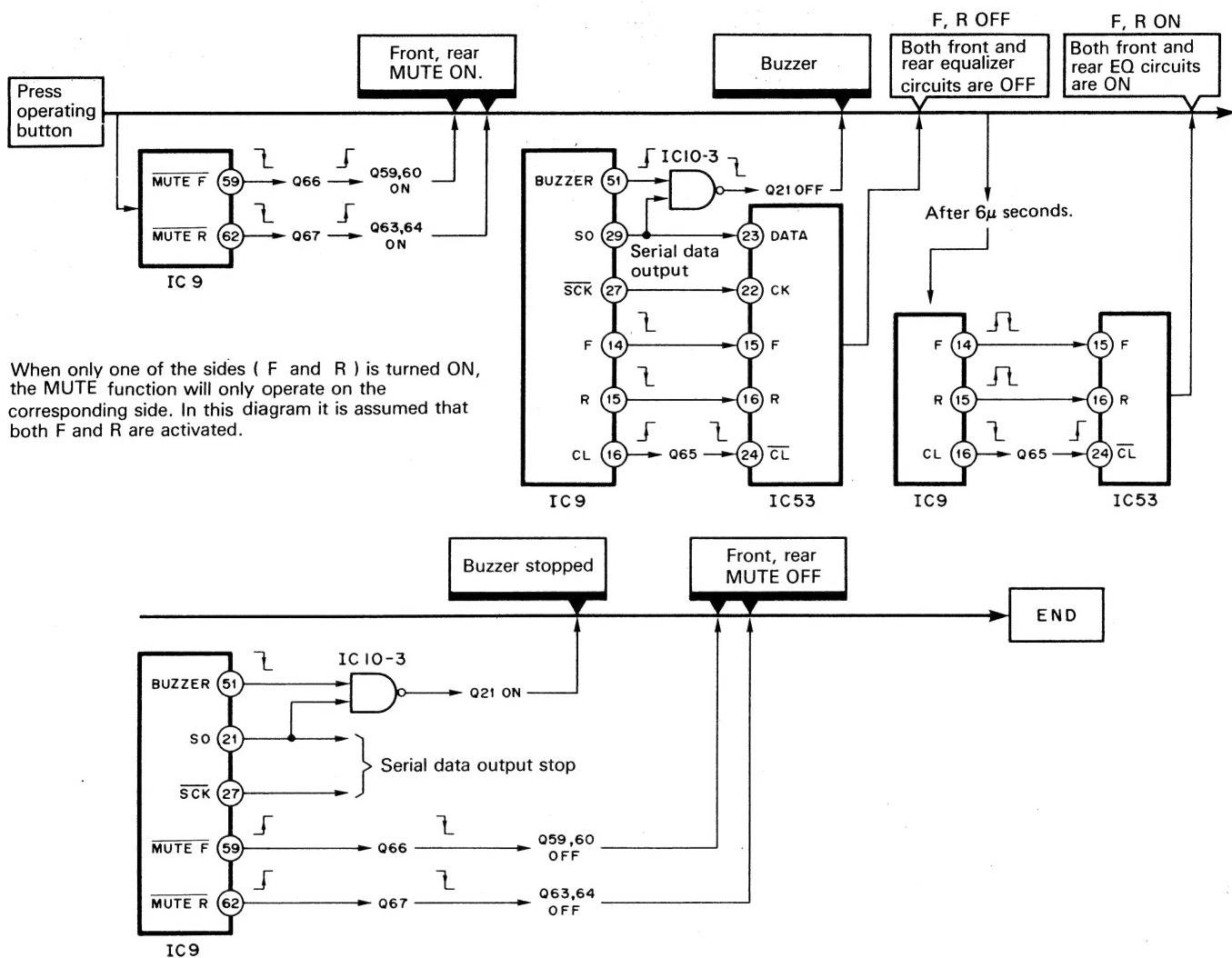
### • Parts List

| Mark | No. | Part No. | Description  | Mark | No.    | Part No.  | Description                     |
|------|-----|----------|--|------|--------|-----------|---------------------------------|
|      | 1.  | CZR-162  | Owner's Manual<br>(EQ-E303(BK)/US) (English)                             |      |        | CZH-158   | Carton (EQ-E303/ES)             |
|      |     | CZR-160  | Owner's Manual<br>(EQ-E303/EW) (Swedish,<br>Norwegian, Dutch, Italian)   |      | 3.     | CZH-153   | Styrofoam                       |
|      |     | CZR-165  | Owner's Manual<br>(EQ-E303/EW, ES) (English,<br>French, German, Spanish) |      | 4.     | CZH-163   | Styrofoam                       |
|      |     | CZR-161  | Owner's Manual<br>(EQ-E303/ES) (Arabic)                                  |      | 5.     | CZH-154   | Spacer                          |
|      |     |          | Card (EQ-E303(BK)/US)<br>Card (EQ-E303(BK)/US)<br>Card (EQ-E303/EW)      |      | 6.     |           | Cover                           |
| 2.   |     | CZH-157  | Carton (EQ-E303(BK)/US)  |      | 7.     | CNB-783   | Mounting Bracket                |
|      |     | CZH-159  | Carton (EQ-E303/EW)  |      | 8.     | CZE-152   | Accessory Assy                  |
|      |     |          |  |      | 8-1.   | CDE-393   | Connector (Battery Wire)        |
|      |     |          |  |      | 8-2.   | CDE-437   | Cord                            |
|      |     |          |  |      | 8-3.   | CEA-901   | Screw Kit                       |
|      |     |          |  |      |        |           | Nut                             |
|      |     |          |  |      | 8-3-1. | B70-056-A |                                 |
|      |     |          |  |      | 8-3-2. | CBA-101   | Screw                           |
|      |     |          |  |      | 8-3-3. | CBA-102   | Screw                           |
|      |     |          |  |      | 9.     | CZH-160   | Contain Box<br>(EQ-E303(BK)/US) |

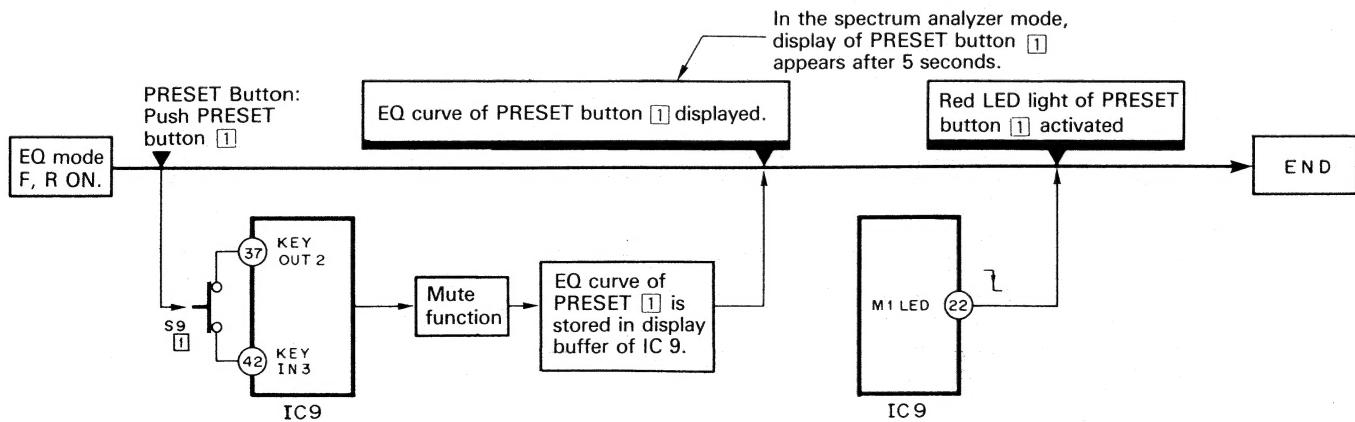
## 12. CIRCUIT OPERATION

- Mute Function...

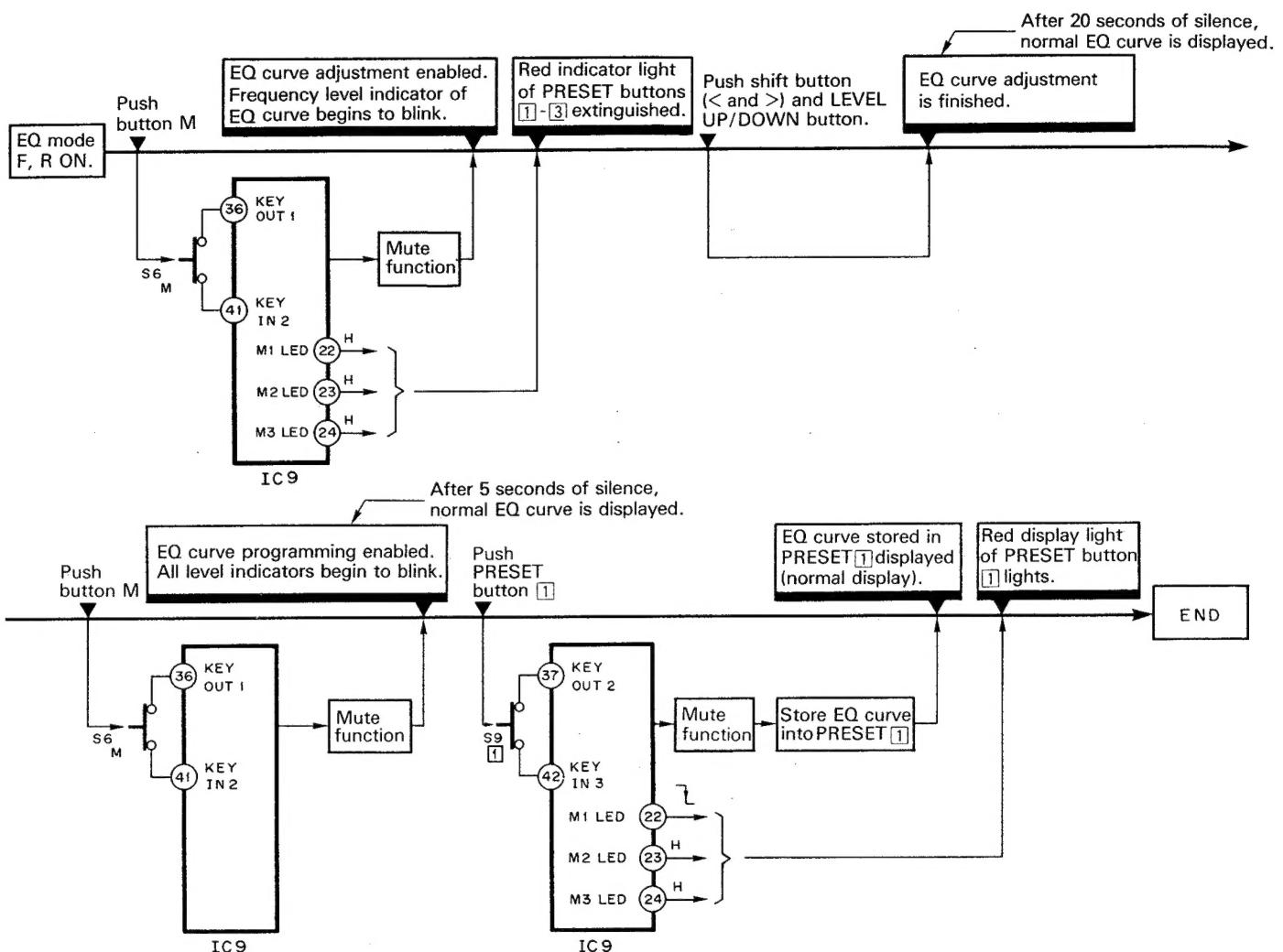
The mute function is activated when any key is pressed. When a key is pressed a soft beeping sound will be heard.



- PRESET Button: Push PRESET button [1]



• Programming: (Store in PRESET ①)



• Operation of other buttons

• EQ/SA button

Selects between EQ display and spectrum analyzer display.

If the unit is in the EQ curve display mode when MUTE is activated, the unit switches to the spectrum analyzer display mode; if in the spectrum analyzer display mode, to the EQ curve display mode.

• Frequency shift buttons (<, >)

Frequency is switched after MUTE is activated. When the < shift button is pressed while the far left LED (60Hz) is blinking, the far right LED starts blinking. When the > shift button is pressed while the far right LED (10kHz) is blinking, the far left LED starts blinking.

• Level up/down button ( $\wedge$ ,  $\vee$ )

Level is adjusted after MUTE is activated. The level cannot be set at a higher or lower level than the level designated to the unit. The buzzer is not generated.

• F and R buttons (Equalizer front and rear buttons)

After MUTE is activated, the equalizer is activated for both the front and rear circuits. However, if the F or R button is pressed after the equalizer has been activated, the equalizer is by-passed.